



Green Project Reserve Funding Business Case

Hardeeville Water Reclamation Facility
Expansion

Hardeeville, SC
October 20, 2015



Contents

1	Contact Information	1
2	Service Area	1
3	Proposed Improvements	1
4	Energy Efficient Components.....	5
4.1	Flow Equalization Mixing.....	5
4.2	Flow Equalization Pumping.....	6
4.3	Biological Process	6
4.3.1	Pre-Anoxic Mixing	6
4.3.2	Aeration System	7
4.4	RAS/WAS Pumping.....	8
4.5	Effluent Pumping	9
4.6	Additional Electrical Information.....	10
4.6.1	Existing Equipment Information	10
4.6.2	Proposed Motor Information.....	10
4.6.3	SCADA System	10
5	Envision	10
6	Economics	11

Tables

Table 1.	Flow Equalization Mixing Power Consumption Comparison	5
Table 2.	Flow Equalization Pumping Power Consumption Comparison	6
Table 3.	Pre-Anoxic Mixers Power Consumption Comparison.....	7
Table 4.	Aeration System Power Consumption Comparison.....	8
Table 5.	RAS/WAS Pumping Power Consumption Comparison	9
Table 6.	Effluent Pumping Power Consumption.....	9
Table 7.	Opinion of Probable Construction Costs.....	12

Figures

Figure 1.	Hardeeville WRF Service Area	3
Figure 2.	Site Plan.....	4

Appendices

Appendix A.	Envision® Article from Engineering News-Record.....	A-1
Appendix B.	Envision® Self-Assessment Results	B-1

1 Contact Information

Owner

Beaufort-Jasper Water and Sewer Authority
6 Snake Road
Okatie, SC 29909
(843) 987-9292
Contact: Mr. Frank Eskridge, Deputy General Manager, Operations & Technical Services

Engineer

HDR
3955 Faber Place Drive, Suite 300
North Charleston, SC 29405
(843) 414-3700
Contact: Mrs. Tracy Lewis, P.E., Senior Project Manager

2 Service Area

The Hardeeville Water Reclamation Facility (HWRF) provides wastewater service to the areas surrounding the Town of Hardeeville. This service area incorporates mostly residential areas, including some typical commercial facilities. There is currently one significant industrial user, South Carolina Electric and Gas (SCE&G). Future industrial users are possible, but not identified at this time. Figure 1 below shows the current and projected service area for the HWRF.

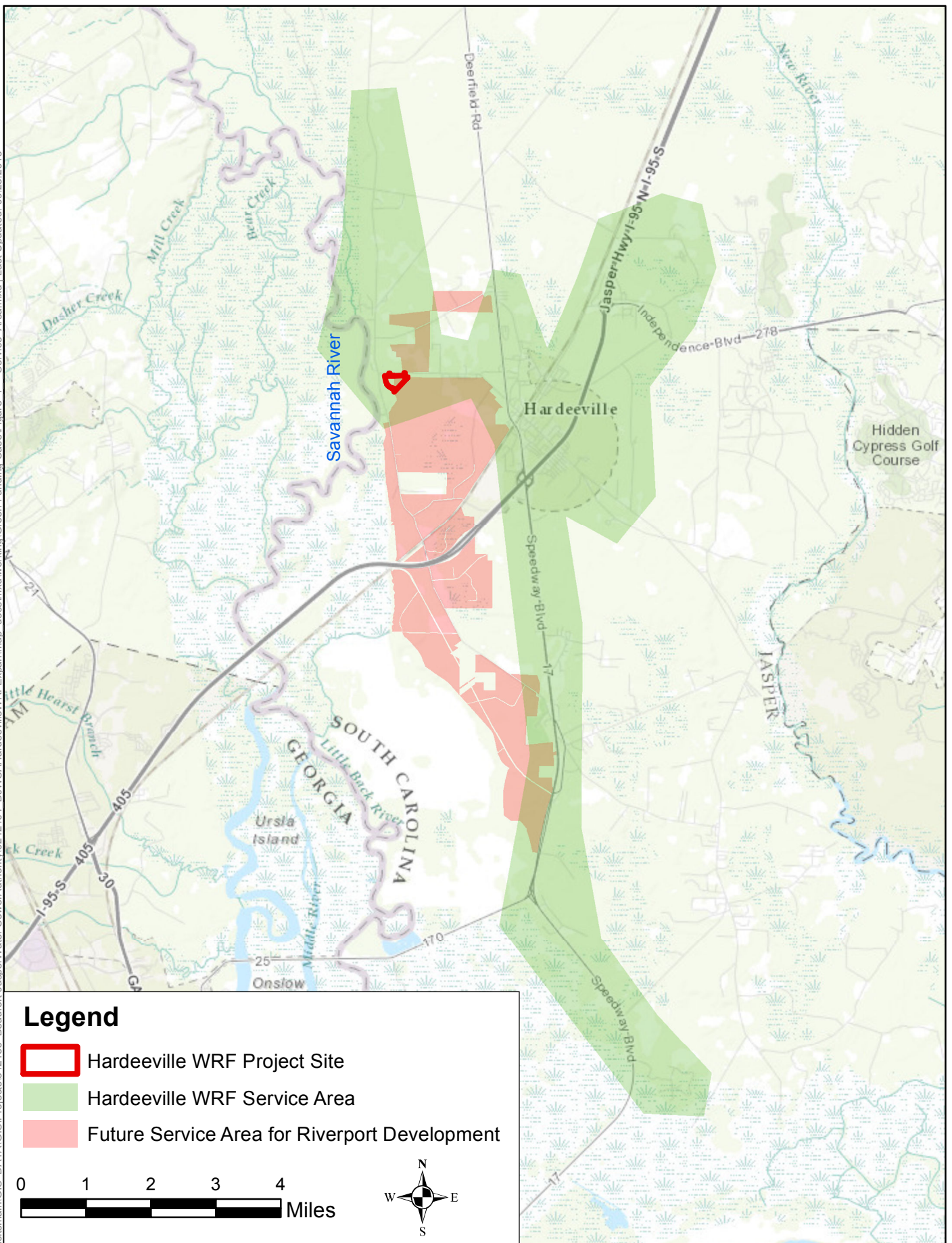
3 Proposed Improvements

The existing plant has a current permitted capacity of 1.01 mgd based on a maximum month average daily flow basis (MMADF), and current flows to the plant average 0.41 mgd. However, the South Carolina Department of Health and Environmental Control (SCDHEC) flow inventory shows current permitted flows in the service area at 1.0 mgd. This has prompted the Beaufort-Jasper Water & Sewer Authority (BJWSA) to pursue expansion of the plant. One of the largest future developments in the service area, Riverport, has provided BJWSA with flow projections. These flow projections are a combination of residential, commercial, and industrial flows. The projections show a projected wastewater flow of approximately 2.4 mgd in 2029. Based on this, there is a need to expand the plant to accommodate current conditions and future growth. Thus the following improvements are proposed:

- Headworks with screening, grit removal, and odor control
- Flow equalization basin and pumping
- New biological processes
- Additional secondary clarification
- RAS/WAS pumping
- Effluent filtration
- Chlorine contact tank and effluent pumping
- Non potable water (NPW) pump station and plant loop
- Sludge holding and dewatering
- Control building
- Chemical storage and feed
- Electrical, instrumentation, and controls

Figure 2 below shows the proposed site plan for the improvements.

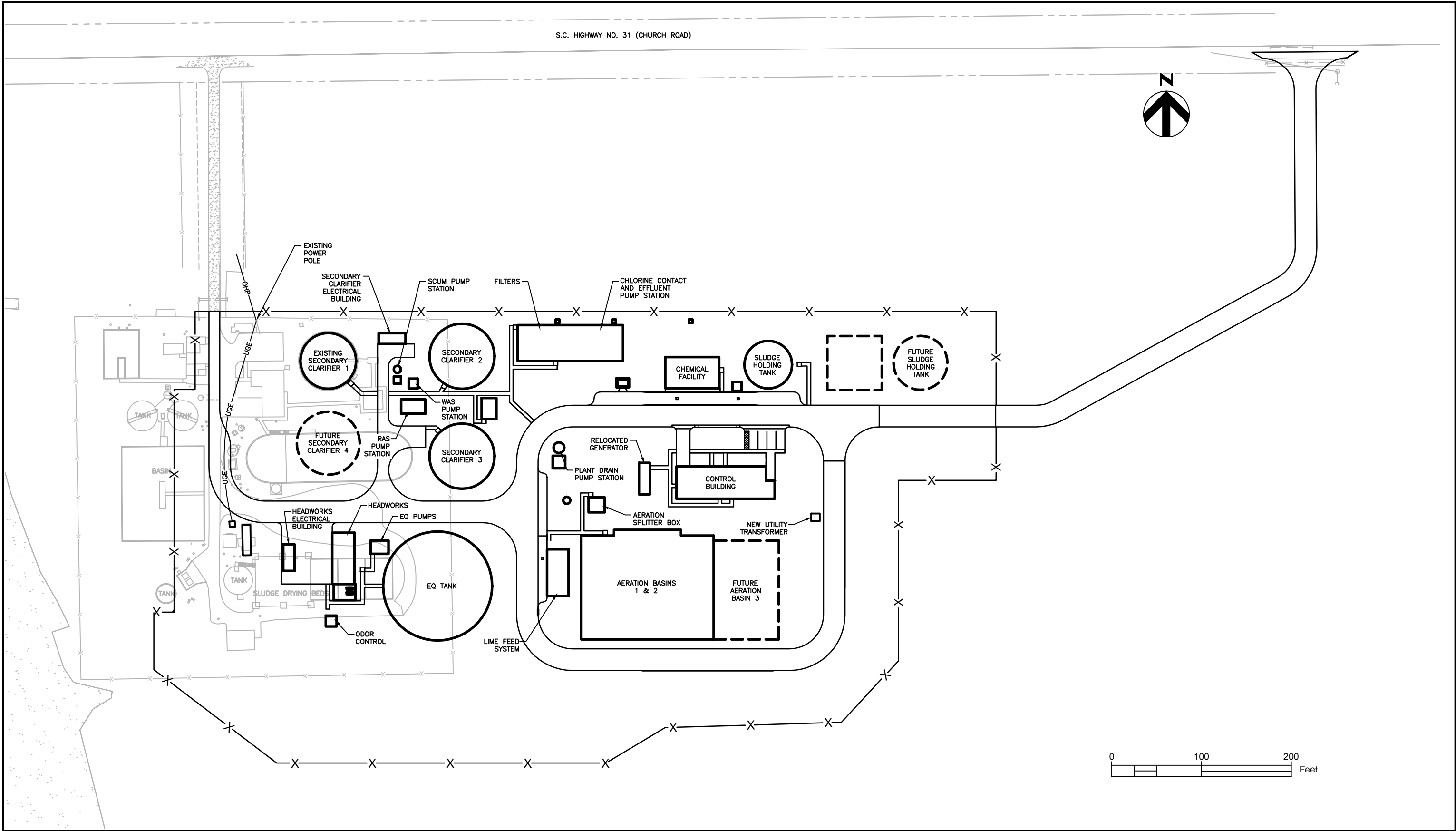
\\c:\main\GIS DATA\GIS\Projects\342136 Beaufort-Jasper Water and Sewer Authority\0242104_BJWSA\Hardeeville\WRF\Expan\map_docs\mxd\working\Green Funding Case\Figure 1 - Service Area.mxd | Last Updated: 09/28/2015



Hardeeville WRF Service Area
Figure 1



C:\pwworking\tpa\td0799639\Figure 2- Site Plan.dwg, Plot, 10/2/2015 3:40:57 PM, ncrourse



HARDEEVILLE WATER RECLAMATION FACILITY EXPANSION

SITE PLAN

DATE
OCTOBER 2015

FIGURE

4 Energy Efficient Components

The components of the HWRF Expansion project that fall under Section 3.0 “Energy Efficiency” eligible projects for the 2012 Clean Water and Drinking Water State Revolving Fund 20 Percent Green Project Reserve are listed below. The business case shows how each of these components of the project are achieving 20% or higher reductions in energy consumption on a per million gallon (MG) of treatment basis. For those components where the existing plant has a similar process, the comparison was made between the existing and proposed technologies. For new technologies that are proposed, the comparison was made between the proposed process and traditional equipment.

4.1 Flow Equalization Mixing

The existing plant has a 0.33 MG sloped wall, below grade, flow equalization (EQ) basin, with a 20 hp floating mechanical mixer. The proposed plant improvements will provide a 1.5 MG prestressed concrete EQ basin with a compressed gas mixing system (BioMix™). This system provides programmed bursts of compressed air through nozzles attached to the tank floor. The air bursts form large bubbles that have low oxygen transfer efficiency but provide thorough mixing, with low energy usage compared to other mixing technologies. A 15 hp compressor is required to provide the air for the mixing system. Table 1 below summarizes the comparison between the existing and proposed EQ basin mixers.

Table 1. Flow Equalization Mixing Power Consumption Comparison

Existing Equipment		Proposed Equipment	
EQ Mixers		BioMix™ Compressors	
Drive Type	Constant	Drive Type	Constant
Quantity	2 (1 duty, 1 standby)	Quantity	2 (1 duty, 1 standby)
Quantity Operating at 1.01 MGD	1	Quantity Operating at 2.70 MGD	1
Horsepower, each	20	Horsepower, each	15
kW, each*	17.3	kW, each	12.0
kW, total at 1.01 MGD	17.3	kW, total at 2.70 MGD	12.0
Power Consumption (kW/MG)	17.1	Power Consumption (kW/MG)	4.5

*kW = (motor horsepower x 0.746) / motor efficiency. Motor efficiency of existing equipment used if known. If not known, 93% was used for existing equipment and all new equipment based on premium efficiency motors.

A decrease in the power demand per MG of wastewater treated from 17.1 kW/MG to 4.5 kW/MG is a reduction of **74%**.

4.2 Flow Equalization Pumping

The existing plant EQ pumping system pumps from the EQ basins to the existing oxidation ditch. There are two 15 hp pumps. The proposed flow EQ pump Station will pump from the new EQ basin to the aeration basins. Two suction lift pumps will be provided with a motor horsepower of 15 hp each. Table 2 below summarizes the comparison between the existing and proposed EQ basin pumps.

Table 2. Flow Equalization Pumping Power Consumption Comparison

Existing Equipment		Proposed Equipment	
Submersible Pumps		Self-Priming Centrifugal Pumps	
Drive Type	VFD	Drive Type	VFD
Quantity	2 (1 duty, 1 standby)	Quantity	2 (1 duty, 1 standby)
Quantity Operating at 1.01 MGD	1	Quantity Operating at 2.70 MGD	2
Horsepower, each	15	Horsepower, each	15
kW, each*	12.0	kW, each	12.0
kW, total at 1.01 MGD	12.0	kW, total at 2.70 MGD	24.1
Power Consumption (kW/MG)	11.9	Power Consumption (kW/MG)	8.9

*kW = (motor horsepower x 0.746) / motor efficiency. Motor efficiency of existing equipment used if known. If not known, 93% was used for existing equipment and all new equipment based on premium efficiency motors.

A decrease in the power demand per MG of wastewater treated from 11.9 kW/MG to 8.9 kW/MG is a reduction of **25%**.

4.3 Biological Process

The existing biological process uses an oxidation ditch with a single 125 hp surface aerator. The proposed biological process is a conventional activated sludge system that is configured as a Modified Ludzack-Ettinger (MLE) process, which includes a pre-anoxic zone for denitrification followed by four aerobic zones with diffused aeration and high-speed turbo blowers. The pre-anoxic basins will be mixed by BioMix™ equipment. In addition, a swing zone is being provided in the aeration basins in aerobic zone 3 that will enable the zone to be operated as anoxic or aerobic. Therefore, it can either receive air through the diffused air system or mixed by the BioMix™ mixers. This section documents the proposed power reduction for both the anoxic and aeration systems compared to the current biological process.

4.3.1 Pre-Anoxic Mixing

The existing Hardeeville WRF does not have anoxic basins as part of the process. The comparison for this section will be based on typical submersible mixers versus the proposed BioMix™ mixing system. Typical power requirements for anoxic submersible mixers are 0.5 hp/1,000 cubic feet, which will be used to evaluate the traditional submersible mixing equipment power requirements. For the BioMix™ system, one 15 hp compressor will be used, with a shared standby for the EQ mixing system. Table 3 below

summarizes the comparison between traditional submersible mixers and the proposed pre-anoxic mixers.

Table 3. Pre-Anoxic Mixers Power Consumption Comparison

Traditional Equipment		Proposed Equipment	
Submersible Mixers		BioMix™ Compressors	
Mixing Requirement (hp/1000 cubic feet)	0.5	Drive Type	Constant
Pre-Anoxic Volume (cubic feet)	88,235	Quantity	2 (1 duty, 1 standby)
Horsepower, total	44	Quantity Operating at 2.70 MGD	1
kW, total at 2.70 MGD	35.4	Horsepower, each	15
Power Consumption (per MG)	13.1	kW, each	12.0
		kW, total at 2.70 MGD	12.0
		Power Consumption (per MG)	4.5

*kW = (motor horsepower x 0.746) / motor efficiency. Motor efficiency of existing equipment used if known. If not known, 93% was used for existing equipment and all new equipment based on premium efficiency motors.

A decrease in the power demand per MG of wastewater treated from 13.1 kW/MG to 4.5 kW/MG is a reduction of **66%**.

4.3.2 Aeration System

The existing biological treatment process is equipped with a single 125 hp surface aerator operated with a VFD. The single aerator does not meet Class I reliability requirements, which require that design air demands be met with the largest unit out of service. Further, based on air demands at permitted flow conditions of 1.01 mgd, the existing 125 hp is sufficient to meet maximum month loads at permitted capacity, but does not appear adequate to meet maximum day demands at permitted capacity conditions.

The new biological treatment process aeration system is sized to meet Class I reliability requirements and is sized to meet maximum day air demands with the largest blower out of service. In addition, the blowers are sized to efficiently accommodate start-up demands by including a smaller jockey blower that will be capable of meeting start-up air demands. Further, blower operation will be controlled to meet air demands via on-line DO monitoring in the aeration basin and controlling air flow rates to aeration zones based on maintaining a target DO set point.

To account for design and operating condition differences, the existing and new aeration systems are compared based on estimated operating blower demands for each system at maximum month design flows and loads (1.01 mgd for existing system and 2.7 mgd for new system). This takes into account VFD turndown for the existing and proposed systems to operate at maximum month flows.

Table 4 below summarizes the comparison between the existing and proposed aeration systems.

Table 4. Aeration System Power Consumption Comparison

Existing Equipment		Proposed Equipment	
Mechanical Surface Aerator		High Speed Turbo Blowers	
Drive Type	VFD	Drive Type	VFD
Quantity	1	Quantity	4 (one smaller, 100 hp jockey blower; two duty larger, 150 hp blowers; one 150 hp standby)
Quantity Operating at 1.01 MGD	1	Quantity Operating at 2.70 MGD	2
Nameplate Horsepower, each	125	Nameplate Horsepower, each	150
Total Operating Horsepower at Max Month Loads (hp)	116	Total Operating Horsepower at Max Month Loads (hp)	160
kW, total at 1.01 MGD	86.4	kW, total at 2.70 MGD	128.3
Power Consumption (kW/ MG)	85.6	Power Consumption (kW/MG)	47.5

*kW = (motor horsepower x 0.746) / motor efficiency. Motor efficiency of existing equipment used if known. If not known, 93% was used for existing equipment and all new equipment based on premium efficiency motors.

The power demand per MG of wastewater treated is estimated to decrease from 85.6 kW/MG to 47.5 kW/MG, resulting in an energy reduction of **44.5%**.

4.4 RAS/WAS Pumping

The existing facility uses two 20 hp pumps (1 operating and one standby) to pump the return activated sludge (RAS) and waste activated sludge (WAS). The WAS is diverted off of the main pump discharge line using a valve. The proposed system will have a 5 hp submersible RAS pump per clarifier (3 operating with one stand-by) and two 5 hp progressing cavity WAS pumps (1 operating and one stand-by). Table 5 below summarizes the comparison between the existing and proposed RAS/WAS pumping systems.

Table 5. RAS/WAS Pumping Power Consumption Comparison

Existing Equipment		Proposed Equipment	
Self-Priming Centrifugal Pumps		RAS Pumps (submersible) WAS Pumps (self-priming centrifugal)	
Drive Type	Constant	Drive Type	VFD
Quantity	2 (1 duty, 1 standby)	Quantity	4 RAS (3 duty, 1 standby) 2 WAS (1 duty, 1 standby)
Quantity Operating at 1.01 MGD	1	Quantity Operating at 2.70 MGD	4 (3 RAS/1 WAS)
Horsepower, each	20	Horsepower, each	5
kW, each*	16.0	kW, each	4.0
kW, total at 1.01 MGD	16.0	kW, total at 2.70 MGD	20.1
Power Consumption (kW/MG)	15.9	Power Consumption (kW/MG)	5.9

*kW = (motor horsepower x 0.746) / motor efficiency. Motor efficiency of existing equipment used if known. If not known, 93% was used for existing equipment and all new equipment based on premium efficiency motors.

A decrease in the power demand per MG of wastewater treated from 15.9 kW/MG to 5.9 kW/MG is a reduction of **63%**.

4.5 Effluent Pumping

The existing effluent pumps consist of two 30 hp vertical turbine pumps, with one operating and one standby unit. The proposed effluent pumping system consists of three 25 horsepower vertical turbine pumps, with two operating and one standby unit. Table 6 below summarizes the comparison between the existing and proposed effluent pumping systems.

Table 6. Effluent Pumping Power Consumption Comparison

Existing Equipment		Proposed Equipment	
Vertical Turbine		Vertical Turbine	
Drive Type	VFD	Drive Type	VFD
Quantity	2 (1 duty, 1 standby)	Quantity	3 (2 duty, 1 standby)
Quantity Operating at 1.01 MGD	1	Quantity Operating at 2.70 MGD	2
Horsepower, each	30	Horsepower, each	25
kW, each*	24.06	kW, each	20.05
kW, total at 1.01 MGD	24.06	kW, total at 2.70 MGD	40.11
Power Consumption (per MG)	23.83	Power Consumption (per MG)	14.85

*kW=(motor horsepower x 0.746) / motor efficiency. Motor efficiency of existing equipment used if known. If not known, 93% was used for existing equipment and all new equipment based on premium efficiency motors.

A decrease in the power demand per MG of wastewater treated from 23.83 kW/MG to 14.85 kW/MG is a reduction of **38%**.

4.6 Additional Electrical Information

4.6.1 Existing Equipment Information

The existing equipment information used in this document is based on motor nameplate data. If nameplate data was not available because the equipment was not accessible, information was obtained from the Operations and Maintenance Manuals.

4.6.2 Proposed Motor Information

The majority of the proposed equipment in this business case will be operated using variable frequency drives (VFDs). The use of VFDs allows the equipment to operate more efficiently at different plant flowrates. The power demand calculations in this document do not take into account the ability to turn down the motor speeds using VFDs, except for the blower analysis. In cases where new equipment with VFDs is replacing existing equipment with constant speed motors, the reduction in power consumption will be even greater than the values listed in this business case. Also, new equipment motors will have premium efficiency motors, when available, to increase the energy efficiency.

4.6.3 SCADA System

A new Supervisory Control and Data Acquisition (SCADA) System will be installed for the plant expansion. This system will incorporate a power monitoring system into the plant control system. This system will provide information on kilowatts, voltage, current and amperes on all operating equipment, which can be used by operations staff to optimize the system. The existing plant does not have a SCADA system.

5 Envision

BJWSA is pursuing an Envision® certification for the proposed improvements at the HWRF. Envision® is the product of a joint collaboration between the Zofnass Program for Sustainable Infrastructure at the Harvard University Graduate School of Design and the Institute for Sustainable Infrastructure. Envision provides a holistic framework for evaluating and rating the community, environmental, and economy benefits of all types and sizes of infrastructure projects. It has been compared to LEED ratings for buildings by the U.S. Green Building Council. It evaluates, grades, and gives recognition to infrastructure projects that use transformational, collaborative approaches to assess the sustainability indicators over the course of the project's life cycle. Appendix A provides a recent article from Engineering News-Record that provides more information on the Envision® certification and recent projects that are pursuing it.

The Envision® Rating System consists of 60 potential credits under the categories of Quality of Life, Leadership, Resource Allocation, Natural World, and Climate. Based on the scoring under each category, a project can achieve a bronze, silver, gold, or platinum level of certification. BJWSA met with their project team of HDR and Haskell (the Construction Manager at-Risk) to develop a self-assessment of potential scoring for each of the applicable credits. Based on this initial assessment, the HWRF project has the potential to achieve a Silver certification in the Envision® Rating System. Appendix B

provides a report summarizing the self-assessment and potential certification level. Based on this, BJWSA is pursuing the Silver certification and is in the process of providing the documentation.

6 Economics

The total opinion of probable construction costs for the Hardeeville WRF Expansion is \$24,500,000. This business case discusses various components of the project which are eligible under the Energy Efficiency section of the 2012 Clean Water and Drinking Water State Revolving Fund 20% Green Project Reserve. In addition, this business case provides information on the Envision[®] Certification that BJWSA is pursuing. Based on the four levels of certification (bronze, silver, gold and platinum), BJWSA is seeking the Silver certification and requesting 50% additional Green Funding on the remaining project cost after the energy reduction eligible portion. The total requested funding based on energy efficiency and Envision[®] certification is \$15,100,000 as summarized in Table 7 below.

Table 7. Opinion of Probable Construction Costs

Category	Costs
1.) Flow Equalization Mixing	
Purchase and Installation	\$ 378,000
Electrical	\$ 57,000
General Requirements + OH&P	\$ 48,000
2.) Flow Equalization Pumping	
Purchase and Installation	\$ 44,000
Electrical	\$ 7,000
General Requirements + OH&P	\$ 6,000
3a.) Biological Process - Pre-Anoxic Mixing	
Purchase and Installation	\$ 265,000
Electrical	\$ 40,000
General Requirements + OH&P	\$ 34,000
3b.) Biological Process - Aeration System (Blowers, Diffusers, Piping)	
Purchase and Installation (50% install cost for diffusers)	\$ 1,640,000
Electrical (Blowers only)	\$ 90,000
General Requirements + OH&P	\$ 207,000
4.) RAS/WAS Pumping	
Purchase and Installation	\$ 130,000
Electrical	\$ 20,000
General Requirements + OH&P	\$ 17,000
5.) Effluent Pumping	
Purchase and Installation	\$ 808,000
Electrical	\$ 122,000
General Requirements + OH&P	\$ 102,000
6.) SCADA System	
Purchase and Installation	\$ 677,000
General Requirements + OH&P	\$ 86,000
Subtotal	\$ 4,778,000
Engineering, Legal, and Administrative	\$ 956,000
Total Probable Equipment Cost for Energy Reduction (2015 dollars)	\$ 5,700,000
Total Project OPCC	\$24,500,000
Remaining Eligible for Envision	\$18,800,000
Envision Requested Green Funding (50% of Remainder)	\$ 9,400,000
Total Requested Green Funding	\$15,100,000

Appendix A. Envision[®] Article from Engineering News-Record

Envision Tool Moves Project Sustainability Beyond Buildings

06/17/2015

By Debra K. Rubin, with Luke Abaffy and Greg Aragon

[Page 1 of 3]

Text size: **A** **A**



[Slide Show](#)

Skanska

More infrastructure owners, designers and builders such as on Florida's \$2.3-billion I-4 upgrade are turning to new tool to build projects right and build the "right project."

Related Links:

- [Engineer Sets Foundation to Envision Sustainable Infrastructure](#)
- [Institute for Sustainable Infrastructure \(ISI\) website](#)
- [Harvard University Zofnass Program for Sustainable Infrastructure](#)
- [InterAmerican Development Bank Infrastructure Project Sustainability Awards-2016](#)
- [Viewpoint by Robert M. Beinstein: Why CEOs Say Sustainable Solutions are Good Business](#)

Two public-sector infrastructure owners with markedly different upgrades getting underway agree on one thing—that the projects have vastly improved thanks to the use of a new tool that allows participants to measure long-term sustainability and justify how and why investments will benefit users and communities.

The Florida Dept. of Transportation has embraced use of the new Envision infrastructure sustainability rating tool presented by its design-build team that was seeking to manage the \$2.3-billion upgrade of Interstate-4. FDOT program manager Loreen Bobo was intrigued that the Skanska-led team's informal use of the tool to rate its construction program resulted in Envision's version of a platinum award, which the firms included in what became a winning proposal.

While the team's project win was based on other factors as well, it has used the tool as a guide to alter project design to reflect added community input, more material reuse and boosted energy efficiency, among other things.

"We need to do the right thing when it comes to the impact we are making on our future, and doing the right thing can start by having the conversation early in the project," says Bobo, who has become the first FDOT employee trained and credentialed to use Envision.

In Madison, Wis., Envision has helped the sewerage district in winning approval of a \$4.5-million project to transform an "eyesore" pump station into "a piece of community infrastructure" with added public amenities, says D. Michael Mucha, chief engineer and district director.

"Envision is a powerful accountability and quality assurance tool for the district," he says. "It allowed us to demonstrate to the public—our ratepayers—that their investment in public infrastructure is providing public value." The station is set to go to bid by next month.

In less than three years since its 2012 launch, Envision is fast becoming the tool of choice for infrastructure owners, designers and builders to measure project success in sustainability—and beyond.

"Envision is transforming how our clients are thinking about sustainability for infrastructure projects, and at a much faster pace than we imagined," says Michaela Wittmann, HDR's sustainability program founder and director.

We have an internal sustainability training program and have credentialed over 200 people. We aren't trying to reach a % goal. Rather, we are strategically credentialing HDR leaders (so they understand the Envision goals), client leaders (so they can answer the critical questions and talk about the value of Envision) and our project designers and planners (so they can efficiently implement Envision). Some of our clients have over 100 ENV SPs on staff and many of our clients are asking us to help prepare some of their staff to take the Envision staff.

The approach takes a more holistic view of infrastructure projects than in the LEED measure used on buildings, that rates sustainability through a multitiered, credit-award approach based on resource use, operational resilience, ecosystem restoration, life-cycle costs and return on investment, among other measures.

The product of simultaneous development over the last decade by three engineering associations—the American Society of Civil Engineers, the American Public Works Association and the American Council of Engineering Cos.—and Harvard University's Zofnass Program for Sustainable Infrastructure in its graduate school of design, Envision now is managed and

quasi-commercialized by an umbrella group, the Institute for Sustainable Infrastructure (ISI), and supported by a broadening array of industry firms.

Only six projects have gone through official Envision "verification" by ISI, akin to LEED ratings by the U.S. Green Buildings Council. But close to 30 projects are in review or close to it, says William A. Bertera, ISI president and CEO, and as many as 450 being rated in informal self-assessments.

"There's been a lot of tire-kicking," he adds, noting that more of the better-scoring projects now are being pushed for formal appraisals "to have the success recognized." According to Bertera, at least 20% of applicants for ISI official ratings have scored better than they did in self-assessments.

"Envision is critical to the industry because it is the only rating system, among hundreds, with the credibility, scale and reach into hundreds of thousands of capital program decision-makers," says John Williams, CEO of consulting firm Impact Infrastructure, which is developing Envision capability to also measure project economic value and return on investment. "It is the only tool in the world that addresses the value of public benefit and provides real-time feedback. The existence of an objective, transparent and comparable business case makes a huge difference in dealing with stakeholders."

Stantec Vice President Marty Janowitz, whose firm is an ISI charter member, says, "Envision actually asks project teams to consider first what is the right project to pursue." Andrew Sauer, green infrastructure manager for Burns & McDonnell, adds that it "can help sell new ideas that sometimes are not even on the table."

The New York City Dept. of Environmental Protection turned to Envision after investigating "many of the 200-plus rating systems on the market" and has done 37 self-assessments on bridges, dams and water-wastewater facilities, says a spokesman. "Envision is not a 'one-size-fits-all' application," he says, adding that the agency "dug deeper" once it validated results. It now is "actively pursuing" five verifications through ISI, he says.

Some 3,200 firm and owner professionals have passed ISI's online Envision credentialing process, with Bertera predicting the number could surpass 100,000. Many firms have set internal goals for required or encouraged credentialed employees and are touting that in proposals.

Envision Tool Moves Project Sustainability Beyond Buildings

06/17/2015

By Debra K. Rubin, with Luke Abaffy and Greg Aragon

[Page 2 of 3]

Text size: **A** **A**

HDR has credentialed more than 200 employees and are helping clients prepare their own staffs to test the Envision test, says Wittman.

Skanska "has developed an Envision training matrix that includes employees of every level throughout our heavy civil construction business unit," says a spokesman. The Madison sewerage district aims to have 100% of its engineering staff credentialed by year-end and requires the same of outside consultants.

Stantec notes its launch of an "aggressive and comprehensive strategy" last year to promote Envision internally and to clients, says Janowitz. The firm now has exceeded a goal of 100 credentialed employees and has included Envision elements in "as many proposals as possible to expose clients to this tool and way of thinking," and to show successful use on projects, he adds.

The firm helped push the Grand Bend wastewater treatment upgrade on Lake Huron in Ontario to gain ISI platinum Envision verification this month, the first such designation in Canada and the first for a global sewerage facility.

Janowitz says the firm and client municipalities "saw a real opportunity to turn ... negative views of a wastewater treatment facility into something positive—something that would not only **not** be viewed as a blight on the communities, but something that would be appreciated."

He says use of Envision resulted in design changes that boosted facility resilience and short and long-term climate change risks, saved municipalities more than \$7 million and can be expanded in size based on peak inflows and population growth.

The Grand Bend project has already "directly contributed" to the firm's win of an even larger project in Ontario, says Janowitz.

He adds that Stantec also is using Envision on other types of infrastructure projects, such as a port project in Vancouver and community development in Georgia. A transportation project is set for official certification next month.

Envision "is a highly flexible tool and is non-prescriptive in nature unlike some other rating systems that are designed to apply to one type of project," says Janowitz. It encourages project teams to challenge assumptions and the status quo."

Los Angeles County's Public Works Dept. also earned platinum status for its Sun Valley watershed project, a first of its kind, says Youn Sim, sustainability manager. He says the project received 67% of applicable Envision credits, the most any project has received to date under the ISI rating. Platinum designation can be reached at 50%.

Envision proponents say the approach's flexibility and broad applicability limit the credits to any one project, but concede the number can be misunderstood by stakeholders. The department has used Envision to develop more than 60 projects, from water resources to transportation to waste management and is the first public agency to credential 100 staffers, says Sim.

The King County, Wash., wastewater treatment unit is piloting Envision on three major capital projects—a pump station and forcemain upgrade, new combined sewer overflow treatment plant and an interceptor upgrade, says Kathy Loland, project planning and delivery section manager.

She says use of the approach "has woven sustainability into the fabric of the projects themselves," with impacts on agency decision-making in areas such as construction waste recycling, energy and water conservation, stormwater management and community impact. Loland says Envision's scoring of "social justice impacts" related to facility siting needs improvement.

However, the InterAmerican Development Bank has used Envision to rate community impacts on projects it funds in 26 Latin American and Caribbean nations, says Ana Maria Vidaurre-Roche, its principal investment officer.

Projects are scored by the Harvard program, but none have yet been submitted for ISI verification. Even so, she says, use of Envision metrics "can make project teams think differently." Cited projects include a rail line in metropolitan Lima, Peru, that has improved greenhouse gas emissions and an airport in Galapagos, Ecuador, that provides 30% of its own energy needs.

"Envision seems to be a more comprehensive tool than LEED as it looks at climate, environmental, use of resources as well as stakeholder involvement and impact on community, together with governance and innovation," says Vidaurre-Roche.

Envision Tool Moves Project Sustainability Beyond Buildings

06/17/2015

By Debra K. Rubin, with Luke Abaffy and Greg Aragon

[Page 3 of 3]

Text size: **A** **A**

Going forward, ISI's Bertera recognizes that with Envision's creation as a tool "largely focused on design and planning," metrics for later construction and O&M phases need more attention.

Developing a construction "module" is among the task orders of Envision's new review board, which had its first meeting in May. "To take advantage of the shorter time scales more closely associated with the construction phase of a project, the tool needs to focus more on practical ways to build that have more of an impact upfront," says Skanska Vice President Paul Haining, one of the contractor's managers who will lead the effort.

Stantec's Janowitz also sees attention to allow Envision to be used in a "systems" approach that will allow planning for multiple projects and across types of infrastructure.

Users also report more interest by power and industrial clients. ISI is outreaching to more contractors and private-sector owners. Bertera notes a recent Dow Chemical inquiry.

ISI also is refining Envision's metrics to measure return on investment that encompasses a project's financial, social and environmental impacts—referred to as the triple bottom line.

Impact Infrastructure's Williams is working with IT firm Autodesk to perfect AutoCASE, a cloud-based tool that links Envision to visualization software. "You plug in project parameters and the tool provides a probability-based return on investment dollar value," says William A. Wallace, a Colorado-based sustainability consultant and early developer of Envision.

"Our AutoCASE tool is the only cloud-based automated product that plugs into BIM technology to run real-time cases mapped to Envision," says Williams, who pioneered the technology at HDR before retiring in 2012 to form his firm. "Our goal is to create a common analytical engine that runs sector specific metrics" and enables project comparisons "on the basis of total returns," he says.

Stantec used the ROI tool on work it did to develop green infrastructure development guidance analysis for Pima County, Ariz., working with Impact Infrastructure as a pilot project. "It was quite helpful in analyzing and supporting analysis and conclusions regarding opportunities to utilize Sustainable ROI to develop and adopt practices and support these options with a robust business case," says Janowitz. By analyzing choices and full benefits over a project's entire life cycle, "We believe it can be of benefit for designers and engineers and can be a way to communicate results and defend choices to political leaders or to the public," he adds.

Impact Infrastructure recently released an AutoCASE version that includes Canadian data and green infrastructure cost estimating features, Williams adds.

Madison sewerage official Mucha sees greater Envision acceptance "if we start to frame [it] as more of an accountability and quality assurance tool and less as a sustainability tool." As an ISI director, "that is something I will want to see happen," he adds. Burns & McDonnell's Sauer, an Envision review board member, says the tool offers "an edge in the marketplace."

Envision expertise can provide more firms with "the opportunity to move up the food chain," adds consultant Wallace. "Instead of responding to RFPs, they can help plan the infrastructure investment programs, figure out how to deliver projects under conditions of uncertainty and do so charging higher rates."

Appendix B. Envision[®] Self-Assessment Results

Envision™ Feasibility Study Hardeeville WRF Expansion

Beaufort-Jasper Water & Sewer Authority



HDR

OVERVIEW

This report provides a summary of the most recent discussions regarding target levels of Envision™ credit achievement for the Beaufort-Jasper Water and Sewer Authority (BJWSA) Hardeeville Water Reclamation Facility (WRF) Expansion. It also summarizes documentation that shall be collected to prove credit intents are met as well as documentation responsibilities.

The summary information is presented in a table using the following format:

Credit	Credit Intent	Applicability to Project	Credit Criteria Achievement Notes	Possible Achievement Level	Necessary Actions to Meet Credit Requirements at Level of Achievement Noted	Evaluation Criteria and Documentation	Documentation and Documentation Responsibility
Envision™ Credit Name	Envision™ Credit Intent (taken directly from Envision™)	Applicability of credit to the project, as determined by project team.	Summary of actions that have already taken place, or will take place, that will assist in proving that the Envision™ credit intent has been met.	Possible level of achievement of each credit (as defined within Envision™: Improved, Enhanced, Superior, Conserving, Restorative), as determined by project team (updated at least bi-monthly)	Identification of actions, decision, or additional scope items that would most likely result in meeting a level of achievement, or a higher level of achievement	Evaluation and Criteria (taken from the Guidance Manual)	List of documentation to be collected to prove credit intent is met; Party/parties responsible for credit documentation.

➤ View credits by category: [Quality of Life](#) | [Leadership](#) | [Resource Allocation](#) | [Natural World](#) | [Climate & Risk](#)

➤ View summary: [Summary](#)

Credit	Credit Intent	Applicability to Project	Credit Criteria Achievement Notes	Possible Achievement Level	Necessary Actions to Meet Credit Requirements at Level of Achievement Noted	Evaluation Criteria and Documentation	Documentation and Documentation Responsibility
QL1.1 Improve community quality of life.	Improve the net quality of life of all communities affected by the project and mitigate negative impacts to communities.	INCLUDE	<ul style="list-style-type: none">Hardeeville Comprehensive Plan includes BJWSA projectsHardeeville Council Meeting presentation	Superior (10 / 25)	N/A	<p>A. Has the project team identified and taken into account community needs, goals, plans and issues?</p> <p>1. Lists and examples of documents obtained and reviewed, minutes of meetings with key stakeholders, community leaders and decision-makers, letters and memoranda.</p> <p>B. Has the project team sought to align the project vision and goals to the needs and goals of the host and affected communities as well as address potential adverse impacts?</p> <p>1. Comprehensive impact assessments conducted, identifying and evaluating the positive and negative impacts of the project on affected communities. Planned actions for mitigating adverse impacts.</p> <p>2. Minutes of meetings, letters and memoranda with key stakeholders, community leaders and decision-makers for obtaining input and agreement regarding the impact assessment and planned actions.</p> <p>C. To what extent has the affected communities been meaningfully engaged in the project design process?</p> <p>1. Reports and documented results of meetings, design charrettes and other activities conducted with representatives of affected communities.</p> <p>2.Evidence of project processes for collecting, evaluating and incorporating community input into the project designs. Demonstration of the thoroughness of the evaluation and incorporation into the designs.</p> <p>3. Evidence showing the extent to which options were identified, and needed and reasonable changes to project were made in accordance with community needs, plans.</p> <p>4. Acknowledgments and endorsements by the community that the design participation process was helpful and that their input was appropriately assessed and incorporated into the project design.</p> <p>D. Has the project owner and the project team designed the project in a way that improves existing community conditions and rehabilitates infrastructure assets?</p> <p>1. Plans, designs, meeting minutes with community stakeholders and decision-makers demonstrating an understanding of community conditions and assets, and substantive efforts to rehabilitate.</p> <p>2. Evidence of community satisfaction and endorsement of plans.</p>	<p>Council Meeting Presentation and Meeting Minutes (BJWSA to provide)</p> <p>Hardeeville Comprehensive Plan</p> <p>Meeting minutes from Board meeting where project announced and public input solicited</p> <p>Same information as above.</p> <p>Description of project and how it is rehabilitating and expanding the existing plant to account for new growth and regulations</p>
QL1.2 Stimulate sustainable growth and development.	Support and stimulate sustainable growth and development, including improvements in job growth, capacity building, productivity, business attractiveness and livability.	INCLUDE	<ul style="list-style-type: none">Creation of jobs and use of local workers for the workMeeting developer projections from RiverportDesigning for future reclaimed water standardsReduced waste load to the Savannah River, which is a recreational areaProviding capacity for future industrial users as well	Conserving (13 / 16)	Haskell to develop documentation for workforce or include in specification	<p>A. Does the project create a significant number of jobs during its design and construction?</p> <p>1. Analyses showing what jobs are reasonably created during the design and construction of the project.</p> <p>B. Does the delivered works create new, or increase the quality of existing, operating, recreational or cultural capacity for business, industry, or the public?</p> <p>1. Report showing how the delivered works expands the capacity or increases the quality of operating, recreational or cultural capacity.</p> <p>2. Verification of the report results by references to official community plans, goals, needs assessments, minutes of meetings, or letters from community leaders, decision-makers.</p> <p>C. Does the delivered works significantly improve community productivity?</p> <p>1. Analyses showing the effects of the delivered works on local productivity, e.g., reduced congestion, lower operating costs, increased operating capacity, increased efficiency, and new operating alternatives.</p> <p>D. Does the project improve community attractiveness for compatible businesses and industries, improves recreational opportunities, and generally improves the economic and</p>	<p>Haskell to provide documentation for workforce</p> <p>Provide development plans (provided by BJWSA), general description of project and rehabilitation of existing plant, design for reclaimed water standards, reduced waste load to the Savannah River. Can provide PER sections that are relevant. Info from Sustainable</p>



Credit	Credit Intent	Applicability to Project	Credit Criteria Achievement Notes	Possible Achievement Level	Necessary Actions to Meet Credit Requirements at Level of Achievement Noted	Evaluation Criteria and Documentation	Documentation and Documentation Responsibility
						<p>social condition of the community?</p> <p>1. <i>Demonstration of how the project improves community attractiveness for compatible businesses and industries, improves recreational opportunities, and generally improves the economic and social conditions in the community.</i></p> <p>2. <i>Evidence showing how the project will improve the overall business environment, e.g., increased productivity, improved access to facilities and infrastructure, increased alternative resources, facilities and infrastructure.</i></p> <p>3. <i>Evidence of new employment opportunities that will be created and the skill base is expanded.</i></p> <p>E. As part of the delivery of the constructed works, does the project rehabilitate, restore, create or repurpose existing community infrastructure assets in the natural and/or built environment, and in doing so, improves community prospects for sustainable economic growth and development?</p> <p>1. <i>Reports, minutes of meetings, memoranda documenting efforts by the project team to work with the community to identify community infrastructure assets, needs for improvement, prospects and plans for growth and development.</i></p> <p>2. <i>Analyses showing how the project will improve community prospects for sustainable economic growth and development.</i></p>	Water Award on Savannah River.
QL1.3 Develop local skills and capabilities	Expand the knowledge, skills and capacity of the community workforce to improve their ability to grow and develop.	INCLUDE	<ul style="list-style-type: none">CMAR project allows use of local workforce.Offer safety training	Superior (12 / 15)	Haskell to develop subcontracting plan and offer safety training	<p>A. What is the expected degree to which the project will contribute to local employment, training and education, with emphasis on the most needy and/ or disadvantaged groups through project planning, design and construction?</p> <p>1. <i>Explanation of how the project team identified community employment, training and worker education needs.</i></p> <p>2. <i>Documentation of plans and commitments for hiring local workers and disadvantaged groups for the project.</i></p> <p>3. <i>Documentation of the extent and skill level of work planned for local firms.</i></p> <p>4. <i>Documentation of the proposed skill mix of local project hires in relation to overall project employment.</i></p> <p>5. <i>Statement of the ratio of proposed local hires to overall hires, and the skill mix of local hires in relation to overall project hiring and employment.</i></p> <p>6. <i>New businesses with local employment expected with the project.</i></p> <p>B. How will the project contribute to long-term community competitiveness?</p> <p>1. <i>Documentation of proposed education and training programs to be developed and implemented, and an explanation of the extent to which these programs will address identified community needs and improved Community competitiveness, current and future.</i></p>	Subcontracting Plan (Haskell) Safety Training (Haskell)
QL2.1 Enhance public health and safety.	Take into account the health and safety implications of using new materials, technologies or methodologies above and beyond meeting regulatory requirements.	INCLUDE		Improved (2 / 16)	Develop list of each technology and impact on public health and safety	<p>A. Have the project owner and the project team assessed the exposures and risks created by the application of new and/or non-standard technologies, materials, equipment and methodologies to be employed on the project?</p> <p>1. <i>Reports documenting the assessment of the exposures and risks to public health and safety.</i></p> <p>B. Have the project owner and the project team assessed and made the appropriate changes to the project design to reduce the risk to public and worker health and safety to acceptable levels, and received approval and signoff by the appropriate environmental and public health and safety officials?</p> <p>1. <i>Documentation of where and the degree to which the project owner and the project team changed the design of the project to better protect public health and safety.</i></p> <p>2. <i>Evidence of approval and signoff by the appropriate environmental and public health and safety officials.</i></p>	Document odor control improvements List each technology and impacts on public health and safety



Credit	Credit Intent	Applicability to Project	Credit Criteria Achievement Notes	Possible Achievement Level	Necessary Actions to Meet Credit Requirements at Level of Achievement Noted	Evaluation Criteria and Documentation	Documentation and Documentation Responsibility
						<p>C. Have the project owner and the project team instituted the appropriate health and safety methodologies and protocols during construction?</p> <p>1. Evidence of approval and signoff by the appropriate environmental and public health and safety officials.</p> <p>2. Evidence that the health and safety methodologies and protocols have been passed onto the constructor.</p>	
QL2.2 Minimize noise and vibration.	Minimize noise and vibration generated during construction and in the operation of the constructed works to maintain and improve community livability.	INCLUDE		Improved (1 / 11)		<p>A. Have appropriate studies been carried out to predict the levels of air-borne, ground-borne and structure-borne noise and vibration that will be present during construction and when the completed works is in operation?</p> <p>1. Noise and vibration studies and field monitoring providing adequate baseline information and predictions of ambient noise and vibration levels during construction and operation.</p> <p>2. Acceptability of the credentials and qualifications of the person(s) conducting the baselines studies and predictions, and developing the mitigation proposals.</p> <p>B. Have proposals for ambient noise and vibration mitigation and monitoring been made and incorporated into the project design to reduce noise and vibration to accepted standard target levels?</p> <p>1. Proposals for ambient noise and vibration mitigation and monitoring submitted.</p> <p>2. Comprehensiveness of proposals in terms of coverage, detail and the flow down of requirements to the construction contractor.</p> <p>C. Has the project been designed to markedly reduce ambient noise and vibration down to levels that substantially improve community livability?</p> <p>1. Analyses and documentation of estimates of ambient noise and vibration levels and comparisons to community needs and goals for livability.</p>	<p>Description of items that are going to reduce noise (blower technology, etc.)</p> <p>300 foot buffer and reduction in noise.</p>
QL2.3 Minimize light pollution	Prevent excessive glare, light at night, and light directed skyward to conserve energy and reduce obtrusive lighting and excessive glare.	INCLUDE	<ul style="list-style-type: none">Will use LED lights where possibleLighting will be pointed downward	Conserving (8 / 11)	Add lighting controls to specifications to turn off lights when nobody at the facility	<p>A. Has the project team conducted an overall assessment of lighting needs for the project?</p> <p>1. Documentation of lighting assessments conducted for the project.</p> <p>2. Considerations of overall appropriate lighting zone levels.</p> <p>B. Has the project team designed the lighting components of the project in a way that reduces lighting energy requirements?</p> <p>1. Plans, drawings, specifications showing the use of energy-efficient lighting, removal of existing but unneeded lighting, use of automatic turnoff systems, application of non-lighting alternatives.</p> <p>C. Has the project team designed the lighting components of the project in a way that reduces or eliminates light spillage into sensitive environments and preserves the night sky?</p> <p>1. Plans, drawings, specifications showing reductions in lighting intensity, the use of high barriers and planted trees and shrubs, and the use of full cutoff lenses.</p> <p>2. Demonstration that signage for the constructed works will meet the following standards for digital signs, digital billboards, electronic message boards or displays, electronic message centers, marquee signs and electronic display systems: During daylight hours between sunrise and sunset, luminance shall be no greater than 2000 candelas per square meter. At all other times, luminance shall be no greater than 250 candelas per square meter. There shall be no display movement such as twirls, swirls, blinking, video clips or other forms of animation. Sign copy cannot change more than once per hour.</p>	Document design items that will minimize light pollution.
QL2.4 Improve community	Locate, design and construct the project in a way that eases traffic	INCLUDE		No Added Value (0 / 14)		<p>A. Have the impacts of the project on community access and mobility during construction and operation been properly and comprehensively addressed?</p> <p>1. Assessment studies and reports addressing the effects of the constructed works on access and mobility.</p>	



Credit	Credit Intent	Applicability to Project	Credit Criteria Achievement Notes	Possible Achievement Level	Necessary Actions to Meet Credit Requirements at Level of Achievement Noted	Evaluation Criteria and Documentation	Documentation and Documentation Responsibility
mobility and access.	congestion, improves mobility and access, does not promote urban sprawl, and otherwise improves community livability.					<p>2. <i>Completeness of the assessment studies and reports.</i></p> <p>B. Has the project team coordinated with owners and operators of adjacent facilities, amenities and/or transportation hubs to address issues of mobility and access during operation of the constructed works? <i>1. Reports, memoranda, minutes of meetings with managers and operators covering access to adjacent facilities, amenities and transportation hubs.</i> <i>2. Decisions made and actions taken.</i></p> <p>C. Has the project team considered, and incorporated when feasible, the use of alternate modes of transport? <i>1. Assessments of the availability, feasibility and use of rail, water, non-motorized transit, and pipeline access to ease congestion.</i> <i>2. Changes made or not made to transport modes and rationale.</i></p> <p>D. Has the project team developed plans to reduce traffic disruption during construction, including monitoring, and corrective action? <i>1. Specifications of requirements and procedures directed to the constructor.</i> <i>2. Comprehensiveness of those specifications.</i></p> <p>E. Has the project team incorporated design strategies to address access and mobility concerns during operation, e.g., congestion, usage rates of existing transit infrastructure, access to public transit and non-motorized transportation? <i>1. Access and mobility principles, requirements and specifications incorporated into the design, and expected outcomes.</i></p> <p>F. Has the project team expanded mobility and access considerations to include improvements to long-term transportation infrastructure efficiency, walkability, and livability? <i>1. Reports, memoranda and minutes of meetings with community officials covering the long-term mobility and access needs of the community.</i> <i>2. Design components showing the extent to which long-term mobility and access needs and issues were incorporated into the constructed works.</i></p>	
QL2.5 Encourage alternative modes of transportation.	Improve accessibility to non-motorized transportation and public transit. Promote alternative transportation and reduce congestion.	INCLUDE		No Added Value (0 / 15)		<p>A. Is the constructed works located within walking distance and is it pedestrian accessible to multi-modal transportation facilities? <i>1. Location and design drawings showing proximity and accessibility to transportation facilities.</i> <i>2. Degree of convenience and accessibility.</i></p> <p>B. Does the constructed works and associated infrastructure restrict the parking of motorized vehicles? <i>1. Location and design drawings showing parking availability in and around the constructed works.</i> <i>2. Parking spaces available relative to expected use of the constructed works and availability of alternative transportation. Comparisons to other parking restricted facilities and infrastructure.</i></p> <p>C. Is the constructed works and associated infrastructure designed for convenience in access to multi-modal transportation facilities? <i>1. Location and design drawings showing bicycle and pedestrian walkways, trails and networks that connect to the site and constructed works.</i> <i>2. Convenience, quality and safety of those walkways, trails and networks.</i></p> <p>D. Is the constructed works configured and located so that users are encouraged to use non-motorized transportation?</p>	



Credit	Credit Intent	Applicability to Project	Credit Criteria Achievement Notes	Possible Achievement Level	Necessary Actions to Meet Credit Requirements at Level of Achievement Noted	Evaluation Criteria and Documentation	Documentation and Documentation Responsibility
						<p>1. Location and design drawings showing the topography is relatively flat, with a network of pathways and bikeways converge on or near the constructed works.</p> <p>2. Availability of facilities and policies for the users.</p> <p>E. Has the project owner and the project team, working with the community developed programs to encourage the use of alternative modes of transportation?</p> <p>1. Provision for sheltered and well-lit bus stops, tram stops, or transit access points.</p> <p>2. Effective display of information such as time and route of public transportation [kiosks, protected displays at bus stops, etc.]</p> <p>F. Has the project owner and the project team identified under-unused pathways, bikeways, rail and/or water modes of transportation that are unused, in disrepair and/or have barriers to safe use? Has the team sought to upgrade these elements and integrate them into the existing transportation infrastructure?</p> <p>1. Location and design drawings showing pathways, bikeways, rail and/or water modes of transportation that are unused and in disrepair.</p> <p>2. Designs for upgrading and incorporating those elements into the existing transportation infrastructure.</p> <p>3. Extent and effectiveness of rehabilitation and incorporation.</p>	
<p>QL2.6</p> <p>Improve site accessibility, safety and wayfinding.</p>	Improve user accessibility, safety, and wayfinding of the site and surrounding areas.	INCLUDE	<ul style="list-style-type: none">Better signage around the siteAdd entrance signSecurity gates and security camerasEducational signageTwo ingress/egress methods	Conserving (12 / 15)	Is educational signage going into the contract – does it need to be included in the specifications?	<p>A. Have the project owner and the project team developed the appropriate signage for safety and wayfinding in and around the constructed works?</p> <p>1. Design documents showing plans for access and egress and plans for signage showing how the design and signage is clear and intuitive for users.</p> <p>B. Have the project owner and the project team addressed appropriately, safety and accessibility in and around the constructed works for emergency personnel?</p> <p>1. Design documents showing plans for access and egress routes for emergency personnel, users and occupants.</p> <p>2. Effectiveness of the design for emergency situations.</p> <p>C. Have the project owner and the project team extended accessibility and signage to protect nearby sensitive sites (wetland, cultural sites, etc.) or, in populated areas, neighborhood safety and security?</p> <p>1. Design documents showing plans for accessibility to and protection of nearby sensitive and/or cultural sites.</p> <p>2. Effectiveness of accessibility and protection.</p> <p>D. Have the project owner and the project team designed the project so as to have a net positive impact on public safety?</p> <p>1. Design documents and plans showing how the project will impact public safety.</p> <p>E. Does the constructed works integrate well with the local community and its surroundings?</p> <p>1. Design documents and plans showing how the project will integrate with the local community and its environmental and cultural resources.</p> <p>F. Have the owner and the project team incorporated features into the project design that restore and improve overall access and safety in adjacent neighborhoods?</p> <p>1. Design documents and plans showing how the project has restored safety and access in the adjacent neighborhoods.</p>	Provide write-up documenting proposed improvements
<p>QL3.1</p> <p>Preserve historic and</p>	Preserve or restore significant historical and cultural sites and related	EXCLUDE	<ul style="list-style-type: none">Cultural Resources Survey performed and no cultural resources to	N/A		<p>A. To what extent has the project team worked with the community and required regulatory and resources agencies to identify cultural resources?</p> <p>1. Reports, memoranda, minutes of meetings with the community and required regulatory and resource agencies to identify cultural resources.</p>	Provide Cultural Resources Survey as documentation



Credit	Credit Intent	Applicability to Project	Credit Criteria Achievement Notes	Possible Achievement Level	Necessary Actions to Meet Credit Requirements at Level of Achievement Noted	Evaluation Criteria and Documentation	Documentation and Documentation Responsibility
cultural resources.	resources to preserve and enhance community cultural resources.		preserve			<p>B. Has the project team conducted a feasibility analysis to understand the possibilities of incorporating preservation, or enhancement, into the project?</p> <p>1. Evidence of a feasibility study.</p> <p>C. To what extent has the project team worked with cultural stakeholders to develop a sensitive design and approach, with the ultimate goal of avoiding all cultural resources or fully preserving the character defining features of that resource?</p> <p>1. Location and design drawings demonstrating that the site avoids impacting any cultural resource, or of efforts to mitigate impacts.</p> <p>2. Design documents of all mitigation efforts in the design.</p> <p>D. Has the project team given special consideration to enhancing or restoring existing cultural resources?</p> <p>1. Documentation of efforts to enhance or restore existing cultural resources.</p> <p>2. Documentation that works was done in collaboration with preservationists to ensure restoration does not damage the quality of the existing cultural resource.</p> <p>3. Qualifications of preservationists.</p>	
QL3.2 Preserve views and local character.	Design the project in a way that maintains the local character of the community and does not have negative impacts on community views.	EXCLUDE		N/A		<p>A. To what extent has the project team demonstrated an understanding of local character of the project setting, in terms of landform or levels, views, natural landscape features, materials, planting, style/detailing, scale, and landscape/ townscape pattern?</p> <p>1. Plans, drawings, and reports identifying important elements of the site character including landform or levels, views, natural landscape features, materials, planting, style/detailing, scale, and landscape/townscape pattern.</p> <p>2. Existing policies and regulations regarding public views and design guidelines relevant to the project.</p> <p>B. Has the project team developed or adopted existing public view plans and design guidelines to preserve important view sheds and local character?</p> <p>1. An inventory of all natural landscape features to be protected.</p> <p>2. An inventory of all view resources to be protected.</p> <p>3. A plan for addressing public views in the project design. Plans should include: identification and location of the areas to be protected, identifying compatible land use, setting development standards, and establishing policies for inappropriate development and land use.</p> <p>4. Design guidelines written for the project to preserve public views, important natural landscape features, and generally fit with the local character and context of its surroundings whether urban or rural.</p> <p>C. To what extent does the final design address views and local character?</p> <p>1. Reports, drawings, plans, or images demonstrating how the final project design addresses each of the identified views, natural landscape features, and elements of local character.</p> <p>D. To what extent has the project team worked with local official, communities, and decision makers?</p> <p>1. Reports, memoranda, minutes of meetings with local officials and decision-makers regarding local policies and regulations.</p> <p>2. Reports, memoranda, minutes of meetings with local officials and decision- makers to identify views, natural landscape features, and important local character traits.</p> <p>3. Reports, memoranda, minutes of meetings with local officials and decision-makers demonstrating their involvement in developing design guidelines or their approval of the final design guidelines for views and fit with local character.</p>	Describe why project doesn't impact local character or have negative impacts on community views.



Credit	Credit Intent	Applicability to Project	Credit Criteria Achievement Notes	Possible Achievement Level	Necessary Actions to Meet Credit Requirements at Level of Achievement Noted	Evaluation Criteria and Documentation	Documentation and Documentation Responsibility
						<p>E. Does the contract include clauses on the preservation of high value landscapes and landscape features, including stated penalties for non- compliance and programs to inspect outcomes and enforce?</p> <p>1. <i>Contract clauses regarding the preservation of high value landscapes and landscape features.</i></p> <p>2. <i>Penalties for non-compliance.</i></p> <p>3. <i>Programs for monitoring and enforcement</i></p> <p>F. Has the project team aided local communities in developing or improving local policies and regulations regarding views and fit with local character for future projects?</p> <p>1. <i>Report documenting any efforts to aid local communities in developing more comprehensive policies and regulations regarding views and fit with local character.</i></p>	
QL3.3 Enhance public space.	Improve existing public space including parks, plazas, recreational facilities, or wildlife refuges to enhance community livability.	INCLUDE	<ul style="list-style-type: none">• 300 foot buffer to be made a conservation easement.• Possible walking trails inside conservation easement – by others• Educational signage for the wildlife and foliage on the site	Superior (6 / 13)	Get conservation easement plat and walking trails (BJWSA)	<p>A. What effect will the project have on public space (e.g., parks, plazas, recreational facilities, or accessible space in wildlife refuges) that enhances community livability?</p> <p>1. <i>Studies, assessments of the impact of the project on existing public space.</i></p> <p>2. <i>Design documents describing any new public space developed as part of the project.</i></p> <p>3. <i>Determination of benefits, improvements, negative impacts.</i></p> <p>4. <i>Determination of risks to public health and safety.</i></p> <p>B. Are the public agencies and other stakeholders satisfied with the project plans involving public space?</p> <p>1. <i>Acceptance by the appropriate public agencies.</i></p> <p>2. <i>Letters, memoranda, minutes of meetings with stakeholders showing stakeholder satisfaction.</i></p> <p>C. Will meaningful and beneficial restoration efforts be undertaken?</p> <p>1. <i>Plans, drawings showing the scope and extent of any restoration efforts to be made on public space.</i></p>	Describe conservation easement and walking trails
QLO.0 Innovate or exceed credit requirements.	To reward exceptional performance beyond the expectations of the system as well as the application of innovative methods which advance the state of the art for sustainable infrastructure.	EXCLUDE		N/A	Team to regularly discuss whether exceptional performance can be documented on any credit and/or an innovation solution not addressed elsewhere in Envision was implemented.	<p>A. To what extent has the project exceeded highest levels of achievement for a given credit?</p> <p>1. <i>Detailed documentation of how the project exceeds the existing requirements, currently within a given Resource Allocation credit.</i></p> <p>B. To what extent does the project implement innovative technologies or methods?</p> <p>1. <i>Documentation of the application of innovative technologies or methods. Detailed description as to how this application will improve upon existing conventional practice either globally or within the unique context of the project. Provide justification as to why this application should be considered ‘innovative’ either as a technology, a method, or its application within the project context (climate, political, cultural, etc.).</i></p> <p>C. To what extent does the project overcome significant problems, barriers, or limitations or create scalable and/or transferable solutions?</p> <p>1. <i>Documentation that the project reduces or eliminates significant problems, barriers, or limitations that previously hampered the use or implementation of certain resources, technologies, processes or methodologies which improve the efficiency or sustainability of a project.</i></p> <p>2. <i>Documentation that the improved performance achieved or the problems, barriers, or limitations overcome are scalable across a wide range of project sizes, and/or are applicable and transferable across multiple kinds of infrastructure projects in multiple sectors.</i></p>	



Credit	Credit Intent	Applicability to Project	Credit Criteria Achievement Notes	Possible Achievement Level	Necessary Actions to Meet Credit Requirements at Level of Achievement Noted	Evaluation Criteria and Documentation	Documentation and Documentation Responsibility
LD1.1 Provide effective leadership and commitment.	Provide effective leadership and commitment to achieve project sustainability goals.	INCLUDE	<ul style="list-style-type: none">• BJWSA has a Vision Document that highlights sustainability• BJWSA has been awarded the first AMWA Sustainability Award• Administration Building is LEED Certified	Conserving (17 / 17)		A. To what level and extent have the project owner and the project team made public commitments, both organizational and project specific, to improving sustainable performance? <i>1. Public statements by the leadership in the project owner's organization, and the leadership of the project team regarding their commitment to the principles of sustainability.</i> <i>2. Written commitment by the project owner and the project team to address the economic, environmental and social aspects of the project at each project stage. For large projects, evidence that a chartering session was conducted that included the project owner, designer, contractor and operator, with a charter document agreed to and signed by all parties.</i> <i>3. Examples of published sustainability reports, and organizational principles and policies regarding sustainability.</i> <i>4. Examples of past or ongoing significant actions taken to improve sustainable performance.</i>	Highlight items in Vision Document Provide application for AMWA Sustainability Award Provide information on LEED Certification for Administration Building
LD1.2 Establish a sustainability management system.	Create a project management system that can manage the scope, scale and complexity of a project seeking to improve sustainable performance.	INCLUDE	<ul style="list-style-type: none">• BJWSA has a Strategic Plan that covers a 3-year period. This is reported to the Board regularly	Superior (7 / 14)		A. Are the project roles, responsibilities and authorities for addressing the issues of sustainability for the project clearly assigned and sufficiently delegated? <i>1. Organizational charts and documentation showing the persons responsible for project sustainability issues, their position in the project organization, and their authority to make project decisions and affect change.</i> B. Has the project team created a sustainability management policy commensurate with the scope, scale and complexity of the project? <i>1. Completeness of the project's sustainability management policy document.</i> <i>2. Coverage of project stakeholders, including the affected communities as well as project suppliers and contractors.</i> <i>3. Commitment of the project team to meeting or exceeding all health and safety standards, and improving social and ethical performance.</i> <i>4. Definitive commitment to achieving improvements in sustainable performance as documented in project plans and in the project's sustainability objectives and targets.</i> C. Have the project owner and the project team assessed and prioritized the environmental, economic and societal aspects of the project, and set project sustainability goals, objectives and targets appropriate for the affected communities? <i>1. Assessment of the environmental, economic and social aspects relevant to the project.</i> <i>2. Assessment of the potential for extraordinary changes in these aspects due to conditions of non-sustainability.</i> <i>3. Prioritized list of project goals, objectives and performance targets that take into account project importance and the consequences of change.</i> <i>4. Alignment of goals, objectives and targets to community needs, issues.</i> D. Is the system sufficient in scope and does it contain an adequate set of mechanisms and business processes to manage the project and achieve the project's objectives and targets? <i>1. Documentation of the project's business processes and management controls, in the form of procedures, flowcharts, checklists and other documented control measures.</i> E. Is the project sustainability management system sufficient to manage extraordinary change in environmental operating conditions, or key design variables? <i>1. Evidence that broad and robust business processes and management controls are in place.</i> <i>2. Sufficiency for addressing the potential for extraordinary change in expected averages, variances and plausible extremes in key design variables.</i>	Provide Strategic Plan



Credit	Credit Intent	Applicability to Project	Credit Criteria Achievement Notes	Possible Achievement Level	Necessary Actions to Meet Credit Requirements at Level of Achievement Noted	Evaluation Criteria and Documentation	Documentation and Documentation Responsibility
LD1.3 Foster collaboration and teamwork.	Eliminate conflicting design elements, and optimize system by using integrated design and delivery methodologies and collaborative processes.	INCLUDE	<ul style="list-style-type: none">Project being completed as a CMARDiscussion of all of the design meetings and coordination	Conserving (15 / 15)	Need to review risk/reward and that SRF funding does not allow it.	<p>A. To what extent has the project team incorporated the principles of collaboration, teamwork and whole systems design in the execution of the project?</p> <p><i>1. Documentation of the multi-disciplinary project team's business processes and management controls, in the form of procedures, flowcharts, checklists and other documented control measures.</i></p> <p><i>2. Evidence of the planned use of design charrettes to identify opportunities for improving sustainable performance and reducing design conflicts.</i></p> <p><i>3. Evidence of the planned use of whole systems design processes to optimize project performance.</i></p> <p>B. To what extent has meaningful risk and reward sharing been made part of the contract between the project owner and the project team?</p> <p><i>1. Existence of risk and reward sharing terms in project contract documents.</i></p>	<p>Document all meetings and CMAR process</p> <p>Document that risk/reward not allowed on this contract</p>
LD1.4 Provide for stakeholder involvement.	Establish sound and meaningful programs for stakeholder identification, engagement and involvement in project decision making.	INCLUDE	<ul style="list-style-type: none">BJWSA presented to Town CouncilTown having meetings on annexing propertyAgenda items for Public input at Board meeting	Improved (1 / 14)	N/A	<p>A. What is the scope and extent to which key stakeholders have been identified and characterized, and key concerns and issues identified?</p> <p><i>1. Lists of stakeholder groups identified as key as compared to total potential.</i></p> <p><i>2. Statement of rationale for selection.</i></p> <p>B. To what extent has the project team solicited and assessed stakeholder issues and concerns through meetings and information exchanges?</p> <p><i>1. Letters, memoranda, notes and minutes of meetings with stakeholder groups.</i></p> <p><i>2. Documentation of the concerns and issues of key stakeholders.</i></p> <p><i>3. Evidence in the form of policies and business practices that ensure fair and equitable assessment and action.</i></p> <p>C. To what extent has the project owner and the project team provided opportunities for stakeholder input into project plans and decision-making?</p> <p><i>1. Letters, memoranda, notes and minutes of meetings with stakeholder groups.</i></p> <p><i>2. Documentation of stakeholder input provided and resulting project decisions made.</i></p> <p>D. Have stakeholder participation and communication programs been established on the project to facilitate stakeholder communication and feedback?</p> <p><i>1. Evidence of a planned or operating stakeholder involvement program for the project.</i></p>	<p>Provide Town Council Presentation</p> <p>Provide Meeting Minutes from Town Council annexing meeting and Board Meetings</p>
LD2.1 Pursue by-product synergy opportunities.	Reduce waste, improve project performance and reduce project costs by identifying and pursuing opportunities to use unwanted by-products or discarded materials and resources from nearby operations.	EXCLUDE		N/A	Need to develop information to show this is not applicable. Look at a site map with major industries to show there are none to use products and develop a figure.	<p>A. To what extent did the project team search for and identify unwanted by-products or discarded materials located in nearby facilities?</p> <p><i>1. Records and documentation of contacts and searches made in nearby facilities, as compared to the total number of potential opportunities.</i></p> <p>B. How detailed was the assessment of their potential for use on the project, either in the design and construction stage, or in operations?</p> <p><i>1. Scope and details of assessment processes used and assessments made.</i></p> <p>C. To what extent did the project team pursue promising by-product synergy opportunities?</p> <p><i>1. Records of by-product synergy opportunities identifies, assessed and pursued. Results of pursuits.</i></p> <p>D. Did the project team achieve success in making use of unwanted by-products or discarded materials on the project, either in the design and construction stage, or in operations?</p> <p><i>1. Documentation of successful by-product synergy opportunity capture and application.</i></p>	<p>Provide narrative for why this is not applicable</p>



Credit	Credit Intent	Applicability to Project	Credit Criteria Achievement Notes	Possible Achievement Level	Necessary Actions to Meet Credit Requirements at Level of Achievement Noted	Evaluation Criteria and Documentation	Documentation and Documentation Responsibility
LD2.2 Improve infrastructure integration.	Design the project to take into account the operational relationships among other elements of community infrastructure which results in an overall improvement in infrastructure efficiency and effectiveness.	INCLUDE	<ul style="list-style-type: none">Designing headworks at same elevation to avoid upstream pump stationsOverall improvement of plant to provide better quality and more capacityProviding capacity for future development	Enhanced (3 / 16)		<p>A. To what extent did the project team seek to improve project sustainability performance through project-wide systems integration?</p> <p><i>1. Evidence of design improvements made and the degree to which these improvements were integrated with other community infrastructure elements.</i></p> <p>B. Has the project team sought to improve sustainable performance of infrastructure through community-wide infrastructure systems integration?</p> <p><i>1. Documentation of the extent to which the project design explicitly brought other community infrastructure designs and completed works into consideration.</i></p> <p>C. Has the project team sought to restore existing community infrastructure assets for the purpose of achieving higher performance through community- wide infrastructure systems integration?</p> <p><i>1. Documentation of project plans to restore existing infrastructure and integrate it into the project design.</i></p>	<p>Describe improvements in terms of items in column on Credit Criteria Achievement Notes</p> <p>Provide portions of alternatives analysis as applicable</p>
LD3.1 Plan for long-term monitoring and maintenance.	Put in place plans and sufficient resources to ensure as far as practical that ecological protection, mitigation and enhancement measures are incorporated in the project and can be carried out.	INCLUDE	<ul style="list-style-type: none">DMRs show long term monitoring required by SCDHECWork orders generated automaticallyElectronic O&M part of projectCIP with asset management for future maintenance	Conserving (10/ 10)	BJWSA to provide write-up of work order system, how maintenance is included in CIP	<p>A. Is there a clear and comprehensive plan in place for long-term monitoring and maintenance of the constructed works?</p> <p><i>1. Plans for long-term monitoring and maintenance of the constructed works, including the requisite access to the completed and operating works.</i></p> <p><i>2. Monitoring and maintenance plans include assessments that the completed works is functioning as designed and that environmental impacts are within the design parameters.</i></p> <p>B. Have sufficient resources been allocated for the monitoring and maintenance of the constructed works?</p> <p><i>1. Designations of the persons or organizations assigned to monitor and maintain the constructed works.</i></p> <p><i>2. Explanation of how funding will be allocated, set aside and maintained as sufficient levels to fund the necessary monitoring and maintenance.</i></p> <p><i>3. Assurance that these resources will be in place following the delivery of the project.</i></p>	Provide narrative to document
LD3.2 Address conflicting regulations and policies.	Work with officials to Identify and address laws, standards, regulations or policies that may unintentionally create barriers to implementing sustainable infrastructure.	INCLUDE		No Added Value (0/ 8)		<p>A. What is the scope and extent of search and assess negative impacts from conflicting regulations and policies?</p> <p><i>1. Evidence of activities to find applicable laws, standards, regulations and/ or policies with requirements that appear to be unintentionally running counter to sustainability goals, objectives and practices.</i></p> <p><i>2. Documentation of the efforts to assess their impact on project sustainability performance.</i></p> <p>B. What is the extent to which the project team worked with regulators to mitigate the negative effects?</p> <p><i>1. Letters, memoranda, and minutes of meetings with regulatory agencies set up to identify and resolve issues, and the results of those efforts.</i></p> <p><i>2. Documentation of resolutions achieved.</i></p>	



Credit	Credit Intent	Applicability to Project	Credit Criteria Achievement Notes	Possible Achievement Level	Necessary Actions to Meet Credit Requirements at Level of Achievement Noted	Evaluation Criteria and Documentation	Documentation and Documentation Responsibility
LD3.3 Extend useful life.	Extend a project's useful life by designing the project in a way that results in a completed works that is more durable, flexible and resilient.	INCLUDE	<ul style="list-style-type: none">Overall improvement to the plant to extend useful life.Providing design elements to assist with expansion to Phase 2Providing quality materials (316 SST, etc.)Alternatives analysis to show NPW evaluation	Conserving (12 / 12)		<p>A. To what extent have the owner and project team considered ways to extend the durability and resilience of the project early in the planning and design stage to reduce future maintenance and waste?</p> <p>1. Documentation of how elements intended to add durability, flexibility and resilience throughout the useful life of the project were incorporated into the design.</p> <p>2. Documentation showing the specification of durable materials and how these improve upon industry norms.</p> <p>3. Documentation showing how implementation elements were placed into construction contracts, and operations and maintenance procedures.</p> <p>B. To what extent have the owner and project team considered the ability for future expansion or reconfiguration?</p> <p>1. Documentation of how the overall design will allow for expansion, reconfiguration, or multiple uses.</p> <p>C. Have the owner and project team conducted a feasibility study to determine areas for potential long term cost savings in regards to designing for future expansion, reconfiguration, durability, reduced maintenance, etc.?</p> <p>1. Results of the feasibility study identifying key areas where increasing investment in extending useful life will offer a reasonable payback.</p>	<p>Narrative describing items</p> <p>Provide alternatives evaluation</p>
LD0.0 Innovate or exceed credit requirements.	To reward exceptional performance beyond the expectations of the system as well as the application of innovative methods which advance the state of the art for sustainable infrastructure.	EXCLUDE		N/A		<p>A. To what extent has the project exceeded highest levels of achievement for a given credit?</p> <p>1. Detailed documentation of how the project exceeds the existing requirements, currently within a given Resource Allocation credit.</p> <p>B. To what extent does the project implement innovative technologies or methods?</p> <p>1. Documentation of the application of innovative technologies or methods. Detailed description as to how this application will improve upon existing conventional practice either globally or within the unique context of the project. Provide justification as to why this application should be considered 'innovative' either as a technology, a method, or its application within the project context (climate, political, cultural, etc.).</p> <p>C. To what extent does the project overcome significant problems, barriers, or limitations or create scalable and/or transferable solutions?</p> <p>1. Documentation that the project reduces or eliminates significant problems, barriers, or limitations that previously hampered the use or implementation of certain resources, technologies, processes or methodologies which improve the efficiency or sustainability of a project.</p> <p>2. Documentation that the improved performance achieved or the problems, barriers, or limitations overcome are scalable across a wide range of project sizes, and/or are applicable and transferable across multiple kinds of infrastructure projects in multiple sectors.</p>	



Credit	Credit Intent	Applicability to Project	Credit Criteria Achievement Notes	Possible Achievement Level	Necessary Actions to Meet Credit Requirements at Level of Achievement Noted	Evaluation Criteria and Documentation	Documentation and Documentation Responsibility
RA1.1 Reduce net embodied energy.	Conserve energy by reducing the net embodied energy of project materials over the project life.	INCLUDE	<ul style="list-style-type: none">Potentially address this later if needed. Not currently part of project scope	No Added Value (0 / 18)		<p>A. Has the project team considered estimations of materials embodied energy assessed by means of LCA?</p> <p>1. <i>Results of the life-cycle energy assessment.</i></p> <p>2. <i>Documentation demonstrating the assessment was performed in accordance with recognized and accepted methodologies, data sources and software. Because of the relative newness of this assessment and the scarcity of information covering embodied energy, the scope of this objective will be limited to the materials that make up the majority portion of the constructed works.</i></p> <p>3. <i>Report on the selection of the life cycle energy assessment model used and/or databases referenced.</i></p> <p>4. <i>Narrative describing how strategies to reduce net embodied energy will not increase operational or maintenance energy over the project, or shorten the life span of the project.</i></p> <p>B. To what extent have the owner and project team reduced the net embodied energy of the project?</p> <p>1. <i>Design documents of elements that will reduce the net embodied energy of the project and a rationale for why they were chosen. This may involve reducing the quantity of material, selection of materials with lower embodied energy.</i></p> <p>2. <i>Calculations showing the overall reduction of embodied energy over industry norms.</i></p>	
RA1.2 Support sustainable procurement practices.	Obtain materials and equipment from manufacturers and suppliers who implement sustainable practices.	INCLUDE		No Added Value (0 / 9)		<p>A. Has the project team defined a sound and viable sustainable procurement program?</p> <p>1. <i>Evidence of a sustainable procurement program consisting of policies and criteria for supplier identification and selection.</i></p> <p>2. <i>Documentation of the criteria for selection and its breadth of triple bottom line coverage.</i></p> <p>B. To what extent has the project team specified materials from sources been considered?</p> <p>1. <i>Documentation the total weight or volume of materials. Cost of materials is also an acceptable measure.</i></p> <p>2. <i>An inventory for all materials being tracked for sustainable procurement practices including a description of the material, and the manufacturer or supplier of the material.</i></p> <p>3. <i>Documentation from manufacturers or suppliers (e.g. Environmental Management System contact, web link to chemical inventory, life cycle assessment (LCA), Environmental Product Declaration (EPD), utility bills, etc.) to demonstrate that sustainable practices are employed for percentage of purchased products.</i></p> <p>C. How much of purchased materials and supplies will be certified by reputable third-party accreditation and standard-setting organizations?</p> <p>1. <i>Evidence of certification of materials and supplies.</i></p> <p>D. What efforts does the project team intend to make to ascertain supplier integrity?</p> <p>1. <i>Evidence of efforts to identify any unresolved worker health and safety or environmental violations of the manufacturers or supplier.</i></p>	



Credit	Credit Intent	Applicability to Project	Credit Criteria Achievement Notes	Possible Achievement Level	Necessary Actions to Meet Credit Requirements at Level of Achievement Noted	Evaluation Criteria and Documentation	Documentation and Documentation Responsibility
RA1.3 Use recycled materials.	Reduce the use of virgin materials and avoid sending useful materials to landfills by specifying reused materials, including structures, and material with recycled content.	INCLUDE	<ul style="list-style-type: none">Plan to integrate recycled content into specificationsHaskell to assist with providing calculations or information on recycled material used.	Enhanced (5 / 14)	<p>Need to add recycled content information into the specifications</p> <p>Haskell to identify recycled materials and percentages that will be used.</p>	<p>A. To what extent has the project team identified the appropriate reuse of existing structures and materials on site and incorporated them into the project?</p> <p>1. <i>Inventory of existing materials or structure that may have reuse potential.</i></p> <p>2. <i>Design documents showing the location and weight or volume of reused structures or materials. In determining weight or volume project teams may refer to standard equivalents.</i></p> <p>B. To what extent has the project team specified materials with recycled content? (Examples include reclaimed bricks, elements or components using recycled materials such as recycled plastics or reprocessed timber)</p> <p>1. <i>Total quantity of materials by weight or volume.</i></p> <p>2. <i>Inventory of specifications for materials seeking inclusion as containing recycled content. Inventory should include the name of the product, the name of the manufacturer, the weight or volume of the material, and the percentage of recycled content (either post-industrial or post-consumer recycled content).</i></p> <p>3. <i>Documentation that all materials meet the necessary quality and performance criteria required for the intended application. They also must meet all state or local solid waste agency requirements for using recycled materials in construction. Any recycled materials used must not pose risks to human health, safety and the environment.</i></p> <p>4. <i>Calculations of percentage of total project materials by weight or volume that are reused or recycled. To calculate materials with recycled content multiply the material weight or volume by the percentage of recycled content. Mechanical, electrical, and water equipment, and their components, may be excluded from the calculations. In these cases the most efficient equipment should be specified. Calculations do not include plants or soils.</i></p>	<p>Provide specifications related to this</p> <p>Provide written plan recycled material plan (Haskell)</p>
RA1.4 Use regional materials.	Minimize transportation costs and impacts and retain regional benefits through specifying local sources.	INCLUDE		No Added Value (0 / 10)		<p>A. To what extent has the project team specified locally sourced materials, plants, aggregates, and soils?</p> <p>1. <i>Total cost of materials.</i></p> <p>2. <i>Inventory of materials, plants, aggregates and soils for construction sourced near the site.</i></p> <ul style="list-style-type: none"><i>Soils: Extraction, harvest or recovery, and manufacture must occur within 50 miles.</i><i>Aggregate: Extraction, harvest or recovery, and manufacture must occur within 50 miles.</i><i>Plants: All growing facilities for the plant must be located within 250 miles.</i><i>All other materials: Extraction, harvest or recovery, and manufacture must occur within 500 miles.</i> <p>3. <i>Calculations of percentage of total project materials by cost that are sourced locally. Reused materials, either onsite or sourced within a 500 mile radius, and materials harvested onsite, including retained plants, count toward meeting the credit requirements. Calculations are based on cost or replacement value. Equipment such as electrical, mechanical, or plumbing should not be included in the calculations. In such cases, performance efficiency far outweighs transportation related emissions. Therefore, the most efficient equipment should be specified regardless of transportation distance.</i></p>	



Credit	Credit Intent	Applicability to Project	Credit Criteria Achievement Notes	Possible Achievement Level	Necessary Actions to Meet Credit Requirements at Level of Achievement Noted	Evaluation Criteria and Documentation	Documentation and Documentation Responsibility
RA1.5 Divert waste from landfills.	Reduce waste, and divert waste streams away from disposal to recycling and reuse.	INCLUDE	<ul style="list-style-type: none">Integrate Envision requirements into demolition contractHaskell to develop construction waste management plan for project construction.Document that landfill wants certain type of waste for cover.	Superior (8 / 11)	<p>Develop specifications related to this</p> <p>Develop Construction Waste Management Plan (Haskell)</p>	<p>A. Has the project team developed a management plan to decrease project waste and divert waste from landfills and incinerators during operation?</p> <p>1. <i>Management plan. Waste management plans should document the volume (or weight) of anticipated waste generation. Plans should include waste type, and methods to reduce waste generation. Plans should present anticipated waste reduction compared to industry norms.</i></p> <p>2. <i>Strategies should be implemented to reduce waste generation and to reuse or recycle waste. In the design phase of the project, there may be instances where waste minimization and recycling/reuse objectives will be in conflict. Decreasing the quantity of waste may increase its toxicity. Methods that produce less waste may have less likelihood of recycling. Project teams should consider not only the quantity of waste being generated but the recyclability of that waste stream as well as it is toxicity.</i></p> <p>3. <i>Efforts to minimize certain waste streams may make those waste streams unusable and/or uneconomical for recycling or reuse. The objective of the designers should be to reach a balance such that the net amount of waste that is ultimately released or sent to disposal is minimized.</i></p> <p>4. <i>Documentation that contractors, sub-contractors, and operators are onboard, aware of waste sorting requirements, and committed to achieving the target levels of reduction</i></p> <p>B. Has the project team identified potential destinations for waste generated on site?</p> <p>1. <i>Inventory of project waste streams and potential sites for acceptable reuse or recycling.</i></p> <p>C. To what extent has the project team diverted waste from landfills?</p> <p>1. <i>Calculations of the total waste reduction measures and percentage of materials diverted to recycling or reuse. The percentage of diverted waste should be calculated as the ratio of material diverted from landfills against the total waste generated during construction or operations.</i></p> <p>2. <i>Calculations may be done by weight or volume but must remain consistent throughout the rating process. Waste deemed hazardous should not be included in the total waste calculations and should be disposed of according to local, state, and federal law.</i></p> <p>3. <i>Measures to reduce the generation of hazardous waste may be included under the project team's consideration.</i></p>	<p>Narrative describing the need of the landfill for waste</p> <p>Provide related specification</p> <p>Provide Construction waste Management Plan (Haskell)</p>
RA1.6 Reduce excavated materials taken off site.	Minimize the movement of soils and other excavated materials off site to reduce transportation and environmental impacts.	INCLUDE	<ul style="list-style-type: none">This will be achieved by the site design and balancing the site for cut and fill.	Superior (5 / 6)	Prepare calculations showing cut and fill and that no excavated material will be taken off site.	<p>A. To what extent has the project team designed the project to balance cut and fill to reduce the excavated material taken off site?</p> <p>1. <i>Design documents of industry norms and estimations of the excavated material taken off site.</i></p> <p>2. <i>Design documents demonstrating how the project was designed to balance cut and fill.</i></p> <p>3. <i>Calculations of the percentage of useful material retained on site over the industry norm case.</i></p>	<p>Narrative describing design</p> <p>Cut/Fill calculations</p>



Credit	Credit Intent	Applicability to Project	Credit Criteria Achievement Notes	Possible Achievement Level	Necessary Actions to Meet Credit Requirements at Level of Achievement Noted	Evaluation Criteria and Documentation	Documentation and Documentation Responsibility
RA1.7 Provide for deconstruction and recycling.	Encourage future recycling, up-cycling, and reuse by designing for ease and efficiency in project disassembly or deconstruction at the end of its useful life.	INCLUDE		No Added Value (0 / 12)		<p>A. To what extent have the owner and project team specified materials that can be easily recycled or reused after the useful life of the project has ended?</p> <p>1. <i>Inventory of materials incorporated into the design that retains some value for future use, i.e., up-cycling. Project teams should consider the likely effects of time and facilities operation on materials before determining if they will retain recyclability or reuse value.</i></p> <p>2. <i>General percentage of total materials by cost or weight or volume likely to be recycled at end of life. Note that the ability to recycle a material does not always mean it is likely to be recycled. Verifiers will determine whether project team's expectations on recyclability are reasonable.</i></p> <p>B. To what extent has the design team facilitated the future disassembly and recycling of materials?</p> <p>1. <i>Plans and arrangements to identify, keep track of and communicate at the appropriate time the components and pre-fabricated units that have been designed for disassembly and/or deconstruction.</i></p> <p>2. <i>Design documents showing efforts to minimize adhering recyclable material to non-recyclable materials or materials that will contaminate the waste stream and limit recyclability.</i></p> <p>3. <i>Design documents showing efforts to detail connections that will ease disassembly and encourage reuse or recycling.</i></p> <p>4. <i>Documentation that the owners and project team have anticipated the effect that time and the facilities operations will have on potentially recyclable materials. Documentations that materials will retain their recyclability through the end of project life.</i></p>	
RA2.1 Reduce energy consumption.	Conserve energy by reducing overall operation and maintenance energy consumption throughout the project life cycle.	INCLUDE	<ul style="list-style-type: none">• Energy reducing technologies being used on the project.• LED lighting being used	Improved (3 / 18)	Develop Green Funding Memo documenting energy reduction	<p>A. To what extent have the owner and project team conducted planning or design reviews to identify and analyze options for reducing energy consumption in the operation and maintenance of the constructed works?</p> <p>1. <i>Reports, memoranda, minutes of meetings with project teams and owner regarding energy reduction strategies.</i></p> <p>B. Have the owner and project team conducted feasibility and cost analysis to determine the most effective methods for energy reduction and incorporated them into the design?</p> <p>1. <i>Inventory of energy saving methods considered.</i></p> <p>2. <i>Results of feasibility studies.</i></p> <p>3. <i>Design documents demonstrating the incorporation of energy saving strategies into the design.</i></p> <p>C. To what extent does the project reduce energy consumption over industry norms?</p> <p>1. <i>Calculation of the industry norm to use as a benchmark. The appropriateness of the comparison will be assessed by the project verifier. All energy sources should be converted into BTU.</i></p> <p>2. <i>Submit calculations for the projects estimated annual energy consumption over the life of the project. Document the percentage reduction over the industry norm benchmark. All energy sources should be converted into BTU.</i></p>	<p>Narrative describing energy reduction</p> <p>Green Funding memo</p>
RA2.2 Use renewable energy.	Meet energy needs through renewable energy sources.	INCLUDE		No Added Value (0 / 20)		<p>A. To what extent is the project's energy needs met through renewable energy?</p> <p>1. <i>Documentation of the project's anticipated annual operational energy consumption broken down by source type. Teams may choose to reference RA 2.1 documentation.</i></p> <p>2. <i>Documentation of the anticipated annual output of all renewable sources and the overall percentage of renewable energy to total energy consumption. Renewable energy includes solar energy (thermal heating, both active and passive and photovoltaic), wind (electricity generation), water (hydro or tidal for electricity generation), biomass (electricity generation or as fuels), Geothermal (electricity generation or heating and cooling), and hydrogen/fuel cells (use as a fuel).</i></p>	



Credit	Credit Intent	Applicability to Project	Credit Criteria Achievement Notes	Possible Achievement Level	Necessary Actions to Meet Credit Requirements at Level of Achievement Noted	Evaluation Criteria and Documentation	Documentation and Documentation Responsibility
RA2.3 Commission and monitor energy systems.	Ensure efficient functioning and extend useful life by specifying the commissioning and monitoring of the performance of energy systems.	INCLUDE	<ul style="list-style-type: none">Will include monitoring of energy systems in the SCADA system	Conserving (11 / 11)	Specification for SCADA system to monitor energy usage	<p>A. Has the owner and project team engaged an independent commissioning of the project?</p> <p>1. <i>Documentation of commissioning requirements in the contract documents.</i></p> <p>2. <i>Demonstration that commissioning authority is independent of both the design and construction team.</i></p> <p>B. To what extent have the project team assembled the necessary information needed to train operations and maintenance workers in a way that facilitates proper training and operations?</p> <p>1. <i>Documentation of materials provided for operations and maintenance.</i></p> <p>C. To what extent does the design incorporate advanced monitoring systems, such as energy sub-meters, which will enable more efficient operations?</p> <p>1. <i>Design documents and specifications showing the location, purpose, and type of monitoring equipment installed capable of monitoring, at minimum, all primary project functions accounting for at least an accumulated 80% of energy use.</i></p> <p>2. <i>Rationale as to how the monitoring equipment may enable more efficient operations over the industry norm.</i></p>	<p>Narrative describing energy monitoring</p> <p>Specification for energy monitoring by SCADA</p>
RA3.1 Protect fresh water availability.	Reduce the negative net impact on fresh water availability, quantity and quality.	INCLUDE	<ul style="list-style-type: none">Designing for reclaimed water potential – well above what is required by the permitMeeting enhanced requirements of the new Savannah River TMDL.	Conserving (17 / 21)	Develop summary table of proposed design limits versus what is required	<p>A. To what extent have the owner and project team conducted a water availability assessment?</p> <p>1. <i>Design documents indicating the location, type, quantity, rate of recharge and quality of water resources available to the project.</i></p> <p>B. Have the project team assessed project water requirements?</p> <p>1. <i>Estimations of average peak demands and long term needs.</i></p> <p>2. <i>Report on the long-term availability and replenishment or recharge of fresh water supply.</i></p> <p>3. <i>Inventory of opportunities for water reuse or groundwater recharge on site.</i></p> <p>4. <i>Calculations of the volume of fresh water discharge after use.</i></p> <p>5. <i>Location of discharge and impact of discharge on receiving water quality and quantity, including temperature and salinity.</i></p> <p>C. To what extent has the project team incorporated design features to minimize the long term negative net impact on ground and surface water source quality and quantity or to achieve a net positive impact on water sources?</p> <p>1. <i>Design documents of all features intended to reduce negative water impacts.</i></p> <p>2. <i>Rationale as to how the integrated systems of the project will work together to mitigate overall negative impacts or achieve net positive recharge</i></p> <p>3. <i>Inventory of any water impacts which the project is not able to mitigate.</i></p> <p>D. Does the project achieve a net positive water impact replenishing the quantity and quality of fresh water surface and groundwater supplies?</p> <p>1. <i>Calculation showing the project has a long-term net positive impact and does not significantly alter natural fluctuation in flow in receiving waterway ecosystems.</i></p>	<p>Narrative describing the design and enhanced water quality</p> <p>Table showing design versus permit requirements</p> <p>TMDL documentation (BJWSA)</p>



Credit	Credit Intent	Applicability to Project	Credit Criteria Achievement Notes	Possible Achievement Level	Necessary Actions to Meet Credit Requirements at Level of Achievement Noted	Evaluation Criteria and Documentation	Documentation and Documentation Responsibility
RA3.2 Reduce potable water consumption.	Reduce overall potable water consumption and encourage the use of greywater, recycled water, and stormwater to meet water needs.	INCLUDE	<ul style="list-style-type: none">Use of an effluent recycle pump station will minimize the use of potable water.Specify showers and toilets to have low flow fixtures.	Superior (13 / 21)	<p>Prepare document to compare potable water usage to effluent reuse to show reduction</p> <p>Develop specification for low flow fixtures</p>	<p>A. To what extent have the owner and project team conducted planning or design reviews to identify potable water reduction strategies during operation and maintenance of the project, and considered alternatives such as non-potable water, recycled greywater, and stormwater?</p> <p><i>1. Reports, memoranda, minutes of meetings with project teams and owner regarding water reduction strategies.</i></p> <p><i>2. Design documents of the projects water needs. Submissions may reference documents RA3.1 B.</i></p> <p>B. Have the owner and project team conducted feasibility and cost analysis to determine the most effective methods for potable water reduction and incorporated them into the design?</p> <p><i>1. Inventory of measures taken to reduce potable water consumption during operations.</i></p> <p><i>2. Results of feasibility studies.</i></p> <p><i>3. Design documents demonstrating the incorporation of water saving strategies into the design.</i></p> <p>C. To what extent does the project reduce potable water consumption over industry norms?</p> <p><i>1. Calculation of the industry norm to be used as a benchmark. The appropriateness of the comparison will be assessed by the project verifier.</i></p> <p><i>2. Calculations of the estimated annual water consumption over the life of the project. Document the percentage reduction over the industry norm benchmark. Calculations may omit non-potable water use such as recycled greywater, or natural surface water and groundwater withdrawals and rainwater, if abundant, with minimal or no impact on site or adjacent sites. Designs for utilization of greywater and, rainwater if appropriate, should be encouraged. Note the use of surface and groundwater reduces the energy necessary to treat and transport potable water but should not be considered if the use of these waters will have impact on water availability or quality (see credit RA3.1 Protect Water Availability).</i></p> <p><i>D. Does the project result in a net positive generation of water, and water upcycling, as a result of on-site purification or treatment?</i></p> <p><i>1. Design documents demonstrating that the project achieves a 100% reduction in potable water use, using no water or meeting water needs through non-potable sources, and provides an available source of useable water (potable or non-potable) for neighboring projects or communities to offset their own water needs.</i></p>	<p>Narrative</p> <p>Document comparing potable to effluent reuse</p> <p>Specification for low flow fixtures</p>



Credit	Credit Intent	Applicability to Project	Credit Criteria Achievement Notes	Possible Achievement Level	Necessary Actions to Meet Credit Requirements at Level of Achievement Noted	Evaluation Criteria and Documentation	Documentation and Documentation Responsibility
RA3.3 Monitor water systems.	Implement programs to monitor water systems performance during operations and their impacts on receiving waters.	INCLUDE	<ul style="list-style-type: none">Monitoring required by permitAdjustments are made via SCADA to alert of quality issues so modifications can be made.	Conserving (11 / 11)		<p>A. Has the owner and project team engaged an independent entity to monitor or oversee the monitoring of the whole system or periodically check the monitoring of the project?</p> <p>1. Documentation of commissioning of monitoring authority requirements in the contract documents.</p> <p>2. Demonstration that the monitoring authority is independent of both the design and construction team, or collected data is periodically checked by an independent authority.</p> <p>B. To what extent has the project design incorporated means to monitor water performance during operations?</p> <p>1. Design documents and specifications identifying the installation of easily accessible and clearly labeled water sub-meters capable of monitoring the water flow of, at a minimum, all major project functions.</p> <p>2. Design documents and specifications identifying the installation of leak detection systems, when appropriate, and water quality collection points.</p> <p>C. To what extent will the project integrate operations and impact monitoring to mitigate negative impacts and improve efficiency?</p> <p>1. Rationale as to how the integrated monitoring systems may be used to mitigate negative impacts by shifting water demand to off-peak hours and/ or by discharging water to groundwater recharge or constructed wetlands or other BMPs instead of through direct surface water connections or other means.</p>	Narrative describing monitoring requirements.
RA0.0 Innovate or exceed credit requirements.	To reward exceptional performance beyond the expectations of the system as well as the application of innovative methods which advance the state of the art for sustainable infrastructure.	EXCLUDE		N/A		<p>A. To what extent has the project exceeded highest levels of achievement for a given credit?</p> <p>1. Detailed documentation of how the project exceeds the existing requirements, currently within a given Resource Allocation credit.</p> <p>B. To what extent does the project implement innovative technologies or methods?</p> <p>1. Documentation of the application of innovative technologies or methods. Detailed description as to how this application will improve upon existing conventional practice either globally or within the unique context of the project. Provide justification as to why this application should be considered 'innovative' either as a technology, a method, or its application within the project context (climate, political, cultural, etc.).</p> <p>C. To what extent does the project overcome significant problems, barriers, or limitations or create scalable and/or transferable solutions?</p> <p>1. Documentation that the project reduces or eliminates significant problems, barriers, or limitations that previously hampered the use or implementation of certain resources, technologies, processes or methodologies which improve the efficiency or sustainability of a project.</p> <p>2. Documentation that the improved performance achieved or the problems, barriers, or limitations overcome are scalable across a wide range of project sizes, and/or are applicable and transferable across multiple kinds of infrastructure projects in multiple sectors.</p>	



Credit	Credit Intent	Applicability to Project	Credit Criteria Achievement Notes	Possible Achievement Level	Necessary Actions to Meet Credit Requirements at Level of Achievement Noted	Evaluation Criteria and Documentation	Documentation and Documentation Responsibility
NW1.1 Preserve prime habitat.	Avoid placing the project – and the site compound/temporary works – on land that has been identified as of high ecological value or as having species of high value.	INCLUDE	<ul style="list-style-type: none">Have done an investigation and shown that the project is not impacting prime habitat.Providing 300 ft buffer near the potential salamander habitat.	Conserving (14 / 18)		<p>A. Does the project avoid development on land that is judged to be “prime habitat” by a third party (including SFI, FSC, or CSA)?</p> <p>1. Narrative describing efforts by an interdisciplinary team to research and document all areas of “prime habitat” near or on the site using local, state, or national prime habitat information.</p> <p>2. Documentation demonstrating no areas of prime habitat are located on-site or within the specified distance of developed areas.</p> <p>B. Does the project preserve, at minimum, an appropriately sized buffer zone of undeveloped land or other habitat protection and connectivity according to the specified width around all prime habitat areas?</p> <p>1. A site map illustrating a buffer of undeveloped land, fulfilling the requirements above, is preserved (or created if the site is currently developed) around all areas of prime habitat. Provide documentation to demonstrate appropriate size of buffer or other protection.</p> <p>C. Does the project significantly increase the area of prime habitat through the restoration of vegetation and habitat connectivity to a degree suitable as habitat (as determined by a qualified habitat restoration professional), either as part of the protective buffer zone or adjacent to the site?</p> <p>1. A restoration plan outlining any efforts to restore prime habitat either on the project site or adjacent to the site, including, at a minimum a site map outlining locations of restoration, and a species list of plants used. This documentation must be signed by a qualified natural resource professional who assisted with the restoration and monitoring plan.</p>	Narrative describing field work performed and salamander work, 300 ft buffer US Fish and Wildlife Documentation
NW1.2 Protect wetlands and surface water.	Protect, buffer, enhance and restore areas designated as wetlands, shorelines, and waterbodies by providing natural buffer zones, vegetation and soil protection zones.	INCLUDE	<ul style="list-style-type: none">Design will provide a buffer to wetlands	Improved (1 / 18)	Develop map showing wetland buffers	<p>A. Is the project located on a site that neither contains nor is located within the specified distance of vernal pools, wetlands, shorelines, or water bodies unless located on a previously developed site?</p> <p>1. Documentation that the proposed site neither contains nor is within the specified distance of a wetland, vernal pool, shoreline or water body or other aquatic resource.</p> <p>B. If the site contains wetlands or water bodies, has the project team established a vegetation and soil protection zone (VSPZ) to provide a natural zone unaffected by development that maintains a buffer equal to the specified distance?</p> <p>1. A site plan showing the final site design, the boundaries of the VSPZ, and the minimal VSPZ depth calculated as the shortest point between the VSPZ boundary and the identified wetland, water body, or shoreline.</p> <p>C. Has the project team restored previously degraded buffer zones to a natural state on a previously developed site?</p> <p>1. A restoration plan outlining any efforts to restore wetlands or waterbodies including, at a minimum a site map outlining locations of restoration, and proof that both required action types were taken. Restoration must include:</p> <ul style="list-style-type: none">Stabilization of stream channel or shoreline. (Bulkheads are not an acceptable stabilization measure for this objective), andRe-vegetation with native plant communities. Stream channel restoration must include a geomorphic analysis of the reach and the planning for dynamical stable stream banks, based on channel dynamics and sediment transport.	Narrative Map showing wetland buffer



Credit	Credit Intent	Applicability to Project	Credit Criteria Achievement Notes	Possible Achievement Level	Necessary Actions to Meet Credit Requirements at Level of Achievement Noted	Evaluation Criteria and Documentation	Documentation and Documentation Responsibility
NW1.3 Preserve prime farmland.	Identify and protect soils designated as prime farmland, unique farmland, or farmland of statewide importance.	INCLUDE		No Added Value (0 / 15)		<p>A. Have the project owner and the project team assessed the project site and determined whether or not onsite soils have been identified as prime farmland, unique farmland, or farmland of statewide importance to conserve for future generations?</p> <p>1. <i>Results of government studies and soil surveys.</i></p> <p>B. To what extent is prime farmland, unique farmland, or farmland of statewide importance to conserve for future generations protected or preserved by this project?</p> <p>1. <i>Documentation showing how prime farmland is protected or development is prevented.</i></p> <p>2. <i>Documentation showing that no soils have been stripped from areas on the site defined as prime farmland.</i></p> <p>C. To what extent has farmland, unique farmland, or farmland of statewide importance to conserve for future generations been restored by this project?</p> <p>1. <i>Demonstration that restoration of prime farmland was accomplished.</i></p>	
NW1.4 Avoid adverse geology.	Avoid development in adverse geologic formations and safeguard aquifers to reduce natural hazards risk and preserve high quality groundwater resources.	EXCLUDE	<ul style="list-style-type: none">The project is sited in an area that has no adverse geologic	N/A		<p>A. Has the project team identified and delineated earthquake faults, low lying coastal areas and karst formations and aquifers?</p> <p>1. <i>Documentation of site investigations to identify and delineate earthquake faults, tsunami susceptible coastlines and karst areas and aquifers, including location of the project site relative to these features.</i></p> <p>B. Has the project team developed plans and designs to reduce the risk of damage, establish operating procedures, and establish a monitoring program for adverse geologic settings?</p> <p>1. <i>Documentation of design of the project that illustrates strategies used to avoid damage to or damage, operating plans, and monitoring plans.</i></p> <p>C. Has the project team established hazard areas, developed buffers around adverse geologic areas, and created runoff controls and spill prevention and cleanup plans?</p> <p>1. <i>Documentation showing hazardous areas and plans illustrating buffers and runoff controls, and spill prevention and cleanup plans.</i></p> <p>D. Has the project team chosen a site that avoids earthquake and karst-related damage and does not affect underlying aquifers?</p> <p>1. <i>Documentation that no faults and karst features exists on site, nor do any site activities affect underlying aquifers.</i></p>	



Credit	Credit Intent	Applicability to Project	Credit Criteria Achievement Notes	Possible Achievement Level	Necessary Actions to Meet Credit Requirements at Level of Achievement Noted	Evaluation Criteria and Documentation	Documentation and Documentation Responsibility
NW1.5 Preserve floodplain functions.	Preserve floodplain functions by limiting development and development impacts to maintain water management capacities and capabilities.	INCLUDE	<ul style="list-style-type: none">Stormwater conveyance and treatment design will limit impacts.	Improved (2 / 14)	<p>Develop calculations to show pre and post construction impacts</p> <p>Develop site plan showing floodplain and our effects.</p>	<p>A. Does the project avoid or limit new development within the design frequency floodplain for waterways of all sizes, unless water dependent infrastructure that must cross a waterway, or is the water dependent infrastructure designed to minimize floodplain impacts or waterway crossings?</p> <p>1. Documentation showing the location of the project relative to the 100-year or design floodplain.</p> <p>2. Documentation showing siting choices relative to floodplains and how impacts to the floodplain have been reduced.</p> <p>3. Document that pre- and post-floodplain storage and floodplain elevations and show that the project does not increase flood elevations outside of project easements and maintain floodplain storage.</p> <p>B. Does the project maintain pre-development floodplain infiltration and water quality?</p> <p>1. Documentation of strategies used to maintain pre-development floodplain infiltration, such as amount of impervious surfaces, established vegetation and soil protection zones, and other strategies that allow for natural floodwater infiltration and filtration of pollutants.</p> <p>2. Estimates of pre-development floodplain infiltration capacity and estimates of post-development floodplain infiltration capacity using above-described strategies.</p> <p>C. Does the project maintain or enhance riparian and aquatic habitat and the maintenance or enhancement of the riparian and in-channel physical and vegetative habitat to support threatened and endangered or otherwise desirable species? Has a flood emergency plan been prepared for all infrastructures in the floodplain accounting for emergency operations and/ or evacuation?</p> <p>1. Documentation of strategies to maintain or enhance habitat, within and along the waterway in the floodplain.</p> <p>2. Provide documentation of a flood emergency management plan to address the operation and/or evacuation plan for all infrastructures in the floodplain.</p> <p>D. Does the project maintain or enhance aquatic habitat connectivity and sediment transport? Is infrastructure subject to frequent damage by floods being modified or removed?</p> <p>1. Documentation of strategies used to maintain or enhance aquatic habitat connectivity, fish and sediment transport, including removal of barriers and traps.</p> <p>2. Inventory of flood damaged infrastructure and plan/design to modify or remove flood-damaged infrastructure.</p>	<p>Narrative of site design</p> <p>Floodplain map</p> <p>Sotrmwater calculations</p>
NW1.6 Avoid unsuitable development on steep slopes.	Protect steep slopes and hillsides from inappropriate and unsuitable development in order to avoid exposures and risks from erosion and landslides, and other natural hazards.	EXCLUDE	<ul style="list-style-type: none">There are no steep slopes on the site.	N/A		<p>A. Does the project follow best management practices to manage erosion and prevent landslides?</p> <p>1. Documentation of best management and design practices used, including protection of downslope buildings, facilities, and infrastructure.</p> <p>B. Is the project sited optimally and managed to avoid excessive erosion?</p> <p>1. Documentation of process used to identify and choose site, including meetings with officials and other stakeholders, site options with benefits and shortfalls of each, and reasoning used for final selection of site.</p> <p>C. Does the project avoid high risk hillsides or steep slopes?</p> <p>1. Documentation of process used to identify high-risk hillsides or steep slopes and their location relative to final site selected.</p>	



Credit	Credit Intent	Applicability to Project	Credit Criteria Achievement Notes	Possible Achievement Level	Necessary Actions to Meet Credit Requirements at Level of Achievement Noted	Evaluation Criteria and Documentation	Documentation and Documentation Responsibility
NW1.7 Preserve Greenfields.	Conserve undeveloped land by locating projects on previously developed greyfield sites and/or sites classified as brownfields.	INCLUDE	<ul style="list-style-type: none">A portion of the project in on a greyfield site	Improved (3 / 23)	Develop calculations showing percentage of site that is greyfield	<p>A. Is the project located on a site that was previously developed, and what percentage of the project site was previously developed?</p> <p>1. Documentation showing the percentage of the developed area of the site that was formerly developed and may be classified as a greyfield.</p> <p>B. Is the project located on a site where all or part of it is documented as contaminated according to a ASTM E1903-11 Phase II Environmental Assessment or on a site deemed a brownfield by local, state, or federal government agencies?</p> <p>1. Documentation of brownfield status of site. Either documentation of the local, state, or federal agency designation or results from an ASTM E1903-11 Phase II Environmental Assessment of the site confirming contamination will suffice.</p> <p>C. Has a brownfield remediation plan been prepared according to the ASTM report?</p> <p>1. Documentation that the controlling public authority has approved proposed remediation measures for the site.</p>	<p>Narrative describing project and what is being done on greyfield site</p> <p>Calculations to show percentage of project that is greyfield.</p>
NW2.1 Manage stormwater.	Minimize the impact of infrastructure on stormwater runoff quantity and quality.	INCLUDE	<ul style="list-style-type: none">Stormwater conveyance and treatment design will allow infiltration	Enhanced (4 / 21)	Develop documentation for stormwater design, use of swales, etc.	<p>A. What percentage improvement for a greyfield or brownfield site does the site's proposed water storage, infiltration, evapotranspiration, and/or water harvesting capacity achieve, or does the site maintain a greenfield site water storage capacity?</p> <p>1. Documentation of the initial, final post-development, and target water storage, infiltration, evaporation, water harvesting and/or cistern storage capacities using TR-55 CNs or other continuous simulation modeling methods to describe site conditions.</p> <p>B. Is 100% of the target water storage capacity is achieved for greyfield and brownfield sites, or does the greenfield site exceed 100% target water capacity so as to mitigate the impact of adjacent developed sites?</p> <p>1. Documentation of the initial, final post-development, and target water storage, infiltration, evaporation, water harvesting and/or cistern storage capacities using TR-55 CNs or other continuous simulation modeling methods to describe site conditions.</p>	<p>Narrative and calculations as required</p>
NW2.2 Reduce pesticide and fertilizer impacts.	Reduce non-point source pollution by reducing the quantity, toxicity, bioavailability and persistence of pesticides and fertilizers, or by eliminating the need for the use of these materials.	INCLUDE	<ul style="list-style-type: none">Will not use any fertilizers or pesticides during construction or after.	Conserving (9 / 9)	Develop specification that does not require fertilizer or pesticides	<p>A. What operational policies will be put in place to control the application fertilizers and pesticides?</p> <p>1. Operational policies for applying fertilizers and pesticides.</p> <p>B. What runoff controls will be installed to minimize groundwater and surface water contamination?</p> <p>1. Plans and drawings showing how runoff controls will be designed and installed.</p> <p>C. Has the project team selected pesticides and fertilizers that have low toxicity, persistence and bioavailability?</p> <p>1. Documentation showing the mix of pesticides and fertilizers to be used on the finished project, along with measured of their toxicity, persistence and bioavailability.</p> <p>D. Has the project team designed the landscaping to incorporate plant species that require no pesticides, herbicides and fertilizers, or use integrated pest management approaches?</p> <p>1. Documentation of plans for landscaping showing the mix of plant species.</p>	<p>Narrative</p> <p>Specification</p> <p>Documentation from BJWSA that maintenance does not require fertilizers or pesticides</p>



Credit	Credit Intent	Applicability to Project	Credit Criteria Achievement Notes	Possible Achievement Level	Necessary Actions to Meet Credit Requirements at Level of Achievement Noted	Evaluation Criteria and Documentation	Documentation and Documentation Responsibility
NW2.3 Prevent surface and groundwater contamination.	Preserve fresh water resources by incorporating measures to prevent pollutants from contaminating surface and groundwater and monitor impacts over operations.	INCLUDE	<ul style="list-style-type: none">O&M Manual will address spill prevention	Improved (1 / 18)	Develop section in O&M Manual to document spill prevention.	<p>A. Have adequate and responsive surface and groundwater quantity and quality monitoring systems been incorporated into the project design?</p> <p>1. Documentation of hydrogeologic delineation studies, taking into consideration the complexity of the aquifers. Note that delineation may have already been done by local authorities.</p> <p>2. For projects situated in areas where the groundwater is used as a source or drinking water, documentation of wellhead protection plans and other requirements including establishing wellhead protection areas.</p> <p>3. Documentation of long-term surface and groundwater quality monitoring programs. Appropriate data will be submitted to the International Stormwater Best Management Practices (BMP) Database. The database web site also provides guidance on BMP monitoring.</p> <p>4. Documentation that the constructed works cannot reasonably have any impact on receiving waters. Show that there is no direct connection to receiving waters from the site of the construct works, or pollutant BMP are implemented and both the discharges to receiving waters and the receiving waters are monitored to verify pollutant loading, biological impact and impact on receiving water flow.</p> <p>B. Have spill and leak prevention and response plans and design been incorporated into the design?</p> <p>1. Spill and leak prevention and response plans.</p> <p>2. Plans and drawings showing the placement of materials storage piles and handling of potentially polluting runoff.</p> <p>C. Has the project team reduced or eliminated potentially polluting substances from the construction and operation of the completed works?</p> <p>1. Efforts to reduce the use of, or replacement of hazardous and/or potentially polluting materials with non-hazardous or non-polluting materials.</p> <p>D. Has the project team sought to reduce future contamination by cleaning up areas of contamination and instituting land use controls to limit the introduction of future contamination sources?</p> <p>1. Plans to clean up contaminated areas.</p> <p>2. Proposed land use controls.</p> <p>3. Plans to prevent contamination from entering receiving waters or alter receiving water flow.</p> <p>E. Have spill and leak prevention and response plans and design been incorporated into the design?</p> <p>1. Spill and leak prevention and response plans.</p> <p>2. Plans and drawings showing the placement of materials storage piles and handling of potentially polluting runoff.</p> <p>F. Has the project team reduced or eliminated potentially polluting substances from the construction and operation of the completed works?</p> <p>G. Has the project team sought to reduce future contamination by cleaning up areas of contamination and instituting land use controls to limit the introduction of future contamination sources?</p> <p>1. Plans to clean up contaminated areas.</p> <p>2. Proposed land use controls.</p>	Narrative Spill prevention plan



Credit	Credit Intent	Applicability to Project	Credit Criteria Achievement Notes	Possible Achievement Level	Necessary Actions to Meet Credit Requirements at Level of Achievement Noted	Evaluation Criteria and Documentation	Documentation and Documentation Responsibility
						<p>1. Efforts to reduce the use of, or replacement of hazardous and/or potentially polluting materials with non-hazardous or non-polluting materials.</p> <p>G. Has the project team sought to reduce future contamination by cleaning up areas of contamination and instituting land use controls to limit the introduction of future contamination sources?</p> <p>1. Plans to clean up contaminated areas.</p> <p>2. Proposed land use controls.</p>	
NW3.1 Preserve species biodiversity.	Protect biodiversity by preserving and restoring species and habitats.	INCLUDE	<ul style="list-style-type: none">300 ft buffer provides maintenance of habitats	Improved (2 / 16)		<p>A. Does the project demonstrate that it does not impact natural habitat and movement corridors or will mitigate adverse impacts of development?</p> <p>1. Documentation of analysis process that identifies existing habitats and outlines strategies to ensure that these habitats are not disturbed, or, if this is not possible, outlines strategies for mitigation of disturbed habitats.</p> <p>2. For each species, a map or equivalent documentation showing areas of important habitat in the surrounding region (GIS analysis and surveys can inform this step). Identify potential and/or likely movement corridors between habitat areas and potential barriers to these corridors on-site. These should include existing barriers as well as those that will result from development.</p> <p>3. A site plan and narrative illustrating the measurers taken to provide new habitat, improve connectivity or mitigate adverse impacts of the project.</p> <p>4. A monitoring plan to ensure mitigation measures is effective for preserving animal access. Document collaboration with local and state agencies</p> <p>B. Does the project facilitate movement between habitats, provide new connections, or otherwise improve existing habitat?</p> <p>1. Documentation of habitat improvement strategies, including all elements listed above.</p> <p>C. Does the project increase available habitat, increase connectivity between habitat areas by providing new connections that were not available before, or by removing existing barriers to movement and habitat?</p> <p>1. Documentation of habitat expansion strategies, including all elements listed above.</p>	Narrative.
NW3.2 Control invasive species.	Use appropriate non-invasive species and control or eliminate existing invasive species.	INCLUDE		No Added Value (0 / 11)		<p>A. Does the project use only locally appropriate and non-invasive plants on the site?</p> <p>1. A list of invasive species in the region, and map all invasive species found on or within 2/3 mile (1000 m) of the site.</p> <p>2. Documentation that all species introduced to the site are non-invasive; include a site plan of the landscaping strategy including all vegetation species.</p> <p>3. Documentation of collaboration with state or local agencies or the qualifications of the biologist, ecologist, or environmental professional.</p> <p>B. Does the project control invasive species already on the site?</p> <p>1. A management/maintenance plan that addresses:</p> <ul style="list-style-type: none">° Prediction and Prevention: Strategies for minimizing potential for invasive species, both plants and animals, to re-appear after initial removal and/or enter the site from nearby areas.° Detection and Management: Strategies for monitoring for and removing invasive species that emerge on-site in the future. <p>C. Does the project actively eliminate existing invasive species and ensure that invasive species stay off the site?</p> <p>1. In addition to documentation above, a management plan that includes:</p> <ul style="list-style-type: none">° Removal: Elimination of any invasive species on-site° Rehabilitation and Restoration: Methods to restore habitats to pre-invasive state	

Credit	Credit Intent	Applicability to Project	Credit Criteria Achievement Notes	Possible Achievement Level	Necessary Actions to Meet Credit Requirements at Level of Achievement Noted	Evaluation Criteria and Documentation	Documentation and Documentation Responsibility
NW3.3 Restore disturbed soils.	Restore soils disturbed during construction and previous development to bring back ecological and hydrological functions.	INCLUDE	<ul style="list-style-type: none">100% of soils disturbed during construction will be restored.	Conserving (8 / 10)	Develop specification to require reuse of all topsoil	<p>A. Have 100% of soils disturbed <u>during construction</u> been restored and reused properly?</p> <p>1. Documentation of soil restoration activities, areas of disturbance, and areas restored.</p> <p>2. Calculations showing that 100% of disturbed soils have been restored.</p> <p>3. Documentation of soil reuse.</p> <p>B. Have 100% of soils disturbed by previous development, been restored and reused properly?</p> <p>1. Documentation of soil restoration activities, areas of disturbance, and areas restored.</p> <p>2. Calculations showing that 100% of disturbed soils have been restored.</p> <p>3. Documentation of soil reuse.</p>	Narrative Specification
NW3.4 Maintain wetland and surface water functions.	Maintain and restore the ecosystem functions of streams, wetlands, waterbodies and their riparian areas.	INCLUDE	<ul style="list-style-type: none">Improved runoff?	Improved (3 / 19)		<p>A. Does the project maintain or enhance hydrologic connection?</p> <p>1. For streams, rivers and lakes documentation showing how the waterway is connected or proposed to be connected to its riparian floodplain at a six-month to two-year frequency flow event.</p> <p>2. For wetlands, documentation showing that structures that drain wetlands will be removed and/or appropriate sources of groundwater or surface waters are reconnected or diverted or maintained.</p> <p>B. Does the project maintain or enhance water quality?</p> <p>1. Documentation showing the current source of the waterways' normal flow, the water quality of its source water, and how the water quality will be maintained or enhanced.</p> <p>C. Does the project maintain or enhance habitat?</p> <p>1. A habitat survey of the waterbody and reference areas, by a recognized professional, and a plan to maintain or enhance the habitat for aquatic and riparian species by plantings and appropriate physical modifications. This survey may include the location and proposed mitigation of existing obstructions to habitat connectivity, such as dams, roadway structures and other infrastructure that may block aquatic or shoreline species migration.</p> <p>D. Does the project maintain or restore sediment transport?</p> <p>1. Documentation demonstrating that sediment transport will not be disrupted by the proposed project and existing sources of sediment obstruction are removed or mitigated and, if appropriate, sediment is removed. Reports from qualified resource professionals are required as part of the documentation.</p> <p>E. Does the project maintain all four ecosystem functions and any fully restore any disturbed functions?</p> <p>1. Documentation provided by a resource professional team outlining strategies for ecosystem functions and description of, and restoration plan for, any disturbed ecosystem functions.</p>	Narrative



Credit	Credit Intent	Applicability to Project	Credit Criteria Achievement Notes	Possible Achievement Level	Necessary Actions to Meet Credit Requirements at Level of Achievement Noted	Evaluation Criteria and Documentation	Documentation and Documentation Responsibility
NW0.0 Innovate or exceed credit requirements.	To reward exceptional performance beyond the expectations of the system and the application of innovative methods which advance the state of the art for sustainable infrastructure.	EXCLUDE		N/A		<p>A. To what extent has the project exceeded highest levels of achievement for a given credit? <i>1. Detailed documentation of how the project exceeds the existing requirements, currently within a given Resource Allocation credit.</i></p> <p>B. To what extent does the project implement innovative technologies or methods? <i>1. Documentation of the application of innovative technologies or methods. Detailed description as to how this application will improve upon existing conventional practice either globally or within the unique context of the project. Provide justification as to why this application should be considered 'innovative' either as a technology, a method, or its application within the project context (climate, political, cultural, etc.).</i></p> <p>C. To what extent does the project overcome significant problems, barriers, or limitations or create scalable and/or transferable solutions? <i>1. Documentation that the project reduces or eliminates significant problems, barriers, or limitations that previously hampered the use or implementation of certain resources, technologies, processes or methodologies which improve the efficiency or sustainability of a project.</i> <i>2. Documentation that the improved performance achieved or the problems, barriers, or limitations overcome are scalable across a wide range of project sizes, and/or are applicable and transferable across multiple kinds of infrastructure projects in multiple sectors.</i></p>	



Credit	Credit Intent	Applicability to Project	Credit Criteria Achievement Notes	Possible Achievement Level	Necessary Actions to Meet Credit Requirements at Level of Achievement Noted	Evaluation Criteria and Documentation	Documentation and Documentation Responsibility
CR1.1 Reduce greenhouse gas emissions.	Conduct a comprehensive life-cycle carbon analysis and use this assessment to reduce the anticipated amount of net greenhouse gas emissions during the life cycle of the project, reducing project contribution to climate change.	INCLUDE		No Added Value (0 / 25)		<p>A. Has the project team performed a life-cycle carbon assessment on the project, using recognized and accepted methodologies, data sources and software?</p> <p>1. Documentation that a life-cycle carbon assessment or a carbon footprint analysis has been performed in accordance with available methodologies, data sources and software.</p> <p>B. Has the project team worked to design the project so that it reduces carbon emissions to meet the designated reduction compared to the emissions calculated in the life cycle carbon assessment?</p> <p>1. Documentation of efforts to reduce carbon emissions and calculations of percentage reduction, as calculated with available methodologies, data sources, and software</p>	
CR1.2 Reduce air pollutant emissions.	Reduce the emission of six criteria pollutants; particulate matter (including dust), ground level ozone, carbon monoxide, sulfur oxides, nitrogen oxides, lead, and noxious odors.	INCLUDE		No Added Value (0/15)		<p>A. Has the project team designed the project follow the California Ambient Air Quality Standards?</p> <p>1. Documentation of expected emissions according to CAAQS, and strategies implemented to reduce air pollutions to required levels.</p> <p>2. Monitoring and control program documents.</p> <p>B. Has the project team designed the project to follow Sections XI and XIV of South Coast Air Quality Management Rules?</p> <p>1. Documentation of applicable rules and strategies for compliance.</p> <p>C. Does the project reduce air pollution to the required level, or improve existing air quality to a higher than pre-development level?</p> <p>1. Documentation of expected emissions of the six criteria pollutants and strategies implemented to reduce air pollutions to required levels.</p>	
CR2.1 Assess climate threat.	Develop a comprehensive Climate Impact Assessment and Adaptation Plan.	INCLUDE		No Added Value (0 / 15)		<p>A. Has the project team created a Climate Impact Assessment and Adaptation Plan that identifies climate change risks and possible responses?</p> <p>1. Documentation that a plan has been completed which meets the requirements outlined above, i.e. calculate or locate expected changes in flood elevations and sea rise for proposed project location; inventory structures in the areas of possible inundation that are important to successful operation of proposed project; develop plan for proposed project to address expected change in inundation, including the adaptation required because of the impact on other critical existing infrastructure in the area.</p> <p>2. Documentation of community outreach during the process.</p> <p>3. Documentation of local emergency management department input.</p>	
CR2.2 Avoid traps and vulnerabilities.	Avoid traps and vulnerabilities that could create high, long-term costs and risks for the affected communities.	INCLUDE	<ul style="list-style-type: none">Document energy reductionUse of back-up generator	Improved (2 / 20)	Need to determine what back-up data needs to be provided to show a basic evaluation	<p>A. Has the project team identified and assessed possible changes in key engineering design variables?</p> <p>1. Documentation of the work done to identify and assess possible changes in key engineering design variables OR documentation for CR2.1 Assess Climate Threat.</p> <p>B. Has the project team assessed potential traps and vulnerabilities and their associated potential costs and risks?</p> <p>1. Documentation outlining potential traps and vulnerabilities and associated costs and risks.</p> <p>C. Does the project avoid, alleviate or eliminate significant infrastructure traps, i.e., high and long term operational costs and/or vulnerabilities?</p> <p>1. Documentation showing the extent to which project concepts, configuration and design have taken into account the need to reduce identified significant risks, traps and vulnerabilities with substantial costs and other negatives.</p>	Basic evaluation documentation



Credit	Credit Intent	Applicability to Project	Credit Criteria Achievement Notes	Possible Achievement Level	Necessary Actions to Meet Credit Requirements at Level of Achievement Noted	Evaluation Criteria and Documentation	Documentation and Documentation Responsibility
CR2.3 Prepare for long-term adaptability.	Prepare infrastructure systems to be resilient to the consequences of long-term climate change, perform adequately under altered climate conditions, or adapt to other long-term change scenarios.	INCLUDE		No Added Value (0 / 20)		<p>A. Has the project team selected the site and designed the infrastructure project and its related systems to be resilient and adaptive to these changes and function under altered climate conditions, supply shortfalls, or other significant long-term changes in operational or environmental conditions?</p> <p>1. <i>Identification of specific measures taken to address the potential consequences of long-term climate change such as sea level rise, increased intensity and frequency of extreme weather events, extended droughts, heat waves, increased ambient temperature, etc.</i></p> <p>2. <i>Identification of specific measures taken to address other potential long-term threats such as desertification, water and energy shortages, shortages of other critical materials, etc.</i></p> <p>3. <i>Identification of siting or design features that increase alternative supply options for water, energy or other materials critical to the operation of the constructed works.</i></p> <p>B. Has the project team made substantial efforts to restore or rehabilitate any existing effects of long-term change, e.g., desertification, beach erosion, loss of wetlands, etc.?</p> <p>1. <i>Plans, designs, documents that show restoration and rehabilitation efforts.</i></p>	
CR2.4 Prepare for short-term hazards.	Increase resilience and long-term recovery prospects of the project and site from natural and man-made short-term hazards.	INCLUDE		No Added Value (0 / 21)	N/A	<p>A. Has the project team considered which types of natural and man-made hazards are possible in the region, and researched how the frequency and severity of these disasters may change over the life of the project?</p> <p>1. <i>Provide a list of expected natural hazards in the area and their predict frequency and severity including but not limited to:</i></p> <ul style="list-style-type: none">◦ <i>Wildfires</i>◦ <i>Floods</i>◦ <i>Tornadoes</i>◦ <i>Hurricanes</i>◦ <i>Earthquakes</i>◦ <i>Tsunamis</i>◦ <i>Man-made hazards</i> <p>B. Has the project team incorporated design strategies into the project to safeguard against these natural hazards?</p> <p>1. <i>Explanation of the strategies included in the project to cope with each event and how they surpass existing codes and regulations.</i></p> <p>C. Does the project restore habitats in a way that reduces the impacts of future short-term disasters?</p> <p>1. <i>Documentation of strategies used and how they minimize the risk of future hazards using environmental restoration.</i></p>	
CR2.5 Manage heat islands effects.	Minimize surfaces with a high solar reflectance index (SRI) to reduce localized heat accumulation and manage microclimates.	INCLUDE	<ul style="list-style-type: none">• Using some concrete surfaces instead of asphalt• Standing metal seam roofs	Improved (1 / 6)	Develop calculations for percent of area with roofing and concrete paving	<p>A. Does the project meet heat island requirements through shading or minimum SRI requirements for the designated percentage of hardscapes?</p> <p>1. <i>Drawings showing all non-roof non-vegetated areas of the site and the surfacing material.</i></p> <p>2. <i>Calculations demonstrating at least 40%, 70%, or 90% of the hardscape project area meets the requirements below.</i></p> <ul style="list-style-type: none">◦ <i>Documentation of all shaded areas, assumed at noon on summer solstice, and a list of species used and expected growth rates showing projected shading five years from planting.</i>◦ <i>Documentation of roof or surface areas, surface material and corresponding SRI.</i>	Calculations

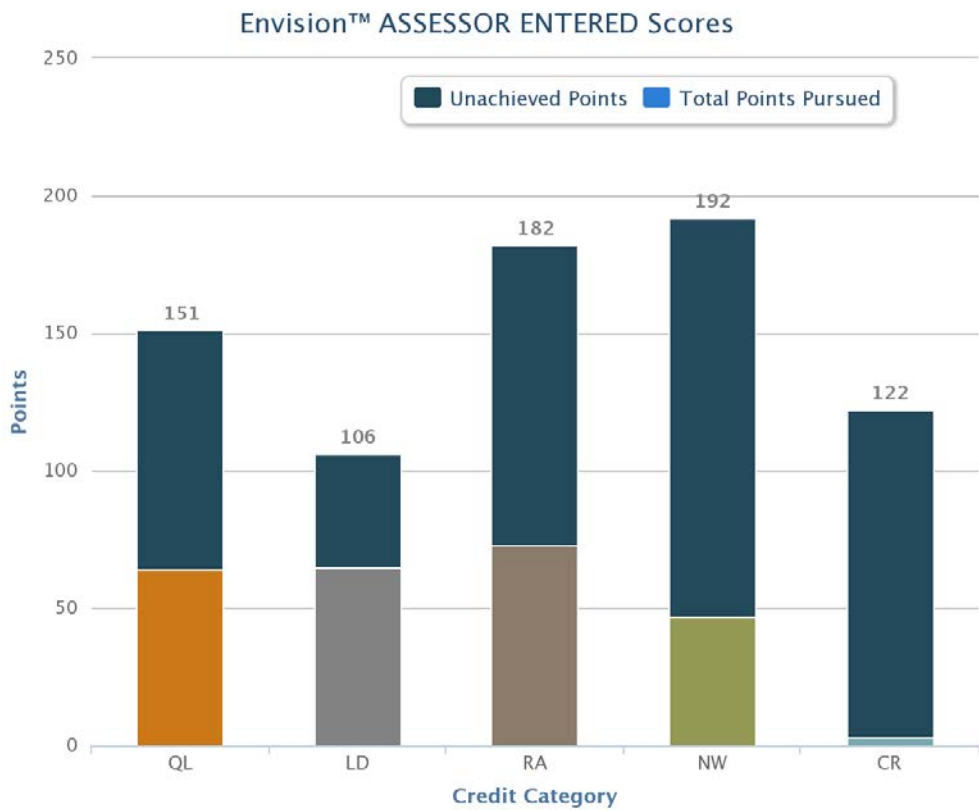


Credit	Credit Intent	Applicability to Project	Credit Criteria Achievement Notes	Possible Achievement Level	Necessary Actions to Meet Credit Requirements at Level of Achievement Noted	Evaluation Criteria and Documentation	Documentation and Documentation Responsibility
CRO.0 Innovate or exceed credit requirements.	To reward exceptional performance beyond the expectations of the system as well as the application of innovative methods which advance the state of the art for sustainable infrastructure.	EXCLUDE		NONE (0 / 5)		<p>A. To what extent has the project exceeded highest levels of achievement for a given credit? <i>1. Detailed documentation of how the project exceeds the existing requirements, currently within a given Resource Allocation credit.</i></p> <p>B. To what extent does the project implement innovative technologies or methods? <i>1. Documentation of the application of innovative technologies or methods. Detailed description as to how this application will improve upon existing conventional practice either globally or within the unique context of the project. Provide justification as to why this application should be considered 'innovative' either as a technology, a method, or its application within the project context (climate, political, cultural, etc.).</i></p> <p>C. To what extent does the project overcome significant problems, barriers, or limitations or create scalable and/or transferable solutions? <i>1. Documentation that the project reduces or eliminates significant problems, barriers, or limitations that previously hampered the use or implementation of certain resources, technologies, processes or methodologies which improve the efficiency or sustainability of a project.</i> <i>2. Documentation that the improved performance achieved or the problems, barriers, or limitations overcome are scalable across a wide range of project sizes, and/or are applicable and transferable across multiple kinds of infrastructure projects in multiple sectors.</i></p> <p>D. Does the project contribute to the advancement of the profession and greater knowledge of the industry in regards to sustainability?</p>	

SUMMARY

The following information is the current summary from the ISI online scoresheet for this project, showing the projected level of award, if all documentation can be compiled and approved.

Credit Category	Applicable Points	Earned Points	Innovation Points	Total Points Pursued	Percentage of Applicable Points
QUALITY OF LIFE	151	64	0	64	42%
LEADERSHIP	106	65	0	65	61%
RESOURCE ALLOCATION	182	73	0	73	40%
NATURAL WORLD	192	47	0	47	24%
CLIMATE AND RISK	122	3	0	3	2%
Total Project Points	753	252	0	252	33%



Based on the credit scores entered, this project may be eligible for the following award:

Silver





3955 Faber Place Drive, Suite 300
North Charleston, SC 29405-8580
(843) 414-3700

hdrinc.com

© 2015 HDR, Inc., all rights reserved